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Copper Wire Worked at High Speed

Rolling of Rods and Drawing of Wire at Much Above Customary Rate—Each Billet Makes One 220-lb. Coil.

BY ROGERS A. FISKE*

SEVENTY-FIVE seconds from the time a billet enters the first groove of the roughing mill a 220-lb. coil of ¼-in. copper rod is on its way to pickling baths. Later, this rod is drawn at a finishing speed of 2000 ft. per min., to various sizes including No. 42 B. & S. wire. (About 1/400 inch in diameter.) This is the established practice in the new copper-rod and wire mill of the Western Electric Co. at its Hawthorne Works, Chicago. Billets used are approximately 4 in. in cross section, 54 in. long and weigh about 225 lb. each. The rod mill, set up to produce ¼-in. rod in 14 passes, operates at a finishing speed of 1500 ft. per min., which gives this mill a 30 per cent greater capacity than that of the average copper-rod mill now in operation in this country.

Wire bars or billets, unloaded on skids at the train shed, are transported by electric truck either to a storage floor or to the charging end of the billet-heating furnace. At the latter point the billets are transferred in groups of six, by an electric hoist, to the furnace charging platform and are fed into the oil-heated furnace by means of a compressed-air pusher. Fuel oil is stored in four 12,000-gal. tanks.

Overhead and at the discharge end of the furnace is a monorail from which depend the tongs used to withdraw the heated billet from the furnace and feed it to the first pass of the roughing mill. The furnace door is opened and closed mechanically by an air cylinder operating through a trip valve mounted on the monorail beam.

Dies Are Lubricated by a Drawing Compound Consisting of a Mixture of Soap, Tallow and Water—Close-Up of a Heavy Wire-Drawing Machine

The roughing mill consists of a five-pass, three-high, motor-driven stand, provided with a repeater between the fourth and fifth passes. The intermediate and finishing mills, involving the nine remaining passes, are driven by individual motors.

It is a prevailing impression among rollers of copper bars that the more passes, that is, the more gradual the working given copper, the better will be the physical qualities of the rod. Investigation, however, has shown that 14-pass rod is decidedly superior in elongation to the average rod made on either 16 or 18-pass mills, and even better in tensile strength. It is not improbable that the temperature of the billet and the actual work done in reducing from billet to rod are the controlling factors and not the number of passes, as is commonly believed.

Four semi-automatic rod coilers are provided which are unloaded by means of lift cages. Pushers move the finished coils to a conveyor, which passes through a water tank and delivers the coils to a transfer table, where they are tied and arranged in groups of nine on a wooden beam. The loaded beams are transported to the pickling vats by means of an electrically-operated monorail tram.

Acid and Copper Recovered by Electrolytic Process

Pickling operations at Hawthorne are not unlike those employed at other plants. That is, sulphuric acid is used to remove copper oxide from the surface of the rod, which is then washed with clear water and finally immersed in a soap-alkali solution, so that the last traces of acid will be removed and to provide a protec-

*Western editor, THE IRON AGE, Chicago.

tive coating against oxidation until such time as the rod can be converted into wire.

The difference lies in the methods employed to control both the temperature and acidity of the bath and in the reclamation of spent acid. The pickling operation consists of immersing the loaded beams in a bath containing diluted sulphuric acid, maintained at a definite temperature. It has been found that the variation of pickling time is not greatly affected from maximum to minimum acid concentration limits, but very important differences result from variations of temperature. The acid is regulated largely by an electrolytic installa-

Nine Rod Bundles, Grouped on a Wooden Beam or Stem, Are Transported by Monorail Trolley to the Pickling Tanks

tion, where the copper is removed from the pickling system.

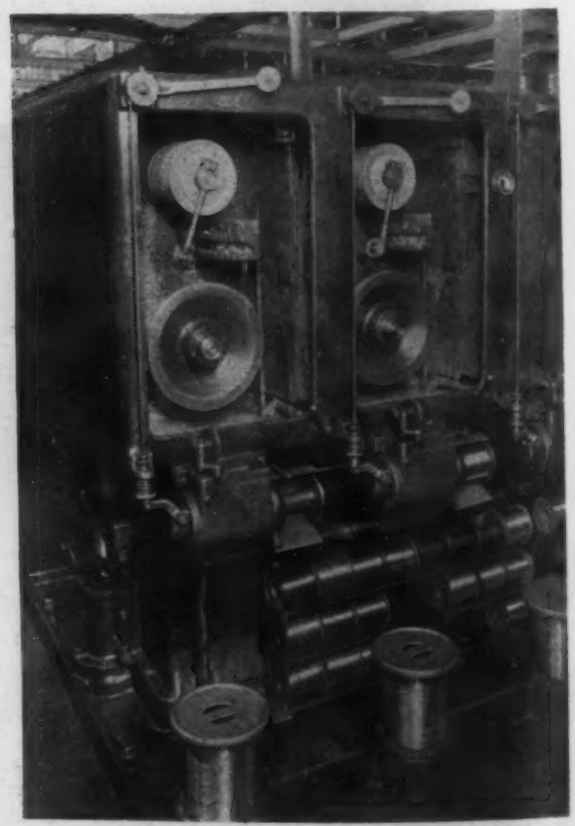
This equipment is in the basement and consists essentially of large tanks through which the acid and copper sulphate are circulated in parallel with the pickle vats upstairs. Thin copper sheets, used as cathodes, are alternated with sheet-lead anodes. When the copper sheets have built up to a given thickness they are removed and replaced by new thin sheets. The heat generated in the plating tanks under normal operating conditions will maintain a minimum temperature of about 90 deg. Fahr. throughout the entire acid system. Higher temperatures are obtained by the use of steam coils in the pickle tanks. The tanks are operated at a current density of 5 amperes per square foot of anode surface, with a rate of deposition of about 0.0026 lb. of copper per ampere-hour.

All electrical equipment of the rod department is under remote control and all compensators and motors, with the single exception of the main motors which drive the rolls, are located in the basement. Exhaust-air ducts which lead from the mills, and also the washer, have been placed in the basement. The washed air is discharged outside of the building. Water used in cooling the mills is drained to a concrete basin in the yard. By means of a bucket suspended beneath the discharge pipe a large portion of the scale and dust washed out by the water is easily removed. The water is recirculated to the mill and at intervals the basin is drained to the sewer and the floor cleared of copper scale and dust.

From the pickling and washing baths the rod is transported by a monorail system to the wire-drawing room. The wire-drawing machines are of a special design of the continuous type. A set of dies, which are to be used on a given machine, are pulled into place on the starting end of a coil of rod on a stringing machine. The coil, with the dies thus strung up, is placed in a wire-drawing machine, which is equipped with cone-stepped capstans, permitting increasing speeds proportioned so as to compensate for the increasing length of the wire as it elongates. Heavy gages of wire are drawn with one set-up on heavy wire-drawing machines. Medium sizes (19, 22 and 24 B. & S. gage) such as are used in lead-covered cables, are redrawn at one set-up in intermediate machines, and finer sizes, as small as 42 B. & S. gage, commonly known as magnet wire, are produced by redrawing the intermediate sizes at one set-up on fine wire machines.

Wire Drawing Machines Are of Compact Design

In the design and construction of wire-drawing equipment for this mill the following points were taken into consideration: compactness, accessibility and elimination of unnecessary weight through the use of steel



Fine Wire Machines Operate at Speeds in Excess of 2000 Ft. per Min. and the Take-Up Device Permits Spooling at Constant Speed. Magnet wire is being here produced and spooled

and bronze alloys and high-speed gearing. Extensive investigations failed to reveal any important relation between the quality of copper wire, drawn from satisfactory wire bar, and drawing speeds. It was finally concluded that the important factors governing wire-drawing speeds were proper lubrication of the wire, dies suitable to the work to be performed and machines which could be operated with safety when equipped with a highly sensitive take-up mechanism to maintain a constant speed as the spool is filled with wire.

Another highly important factor was so to design equipment as to avoid respooling. It will be well here to review briefly copper wire-drawing speeds as found in

Wire-Drawing Machines Are Completely Inclosed and Designed to Occupy a Minimum of Floor Space

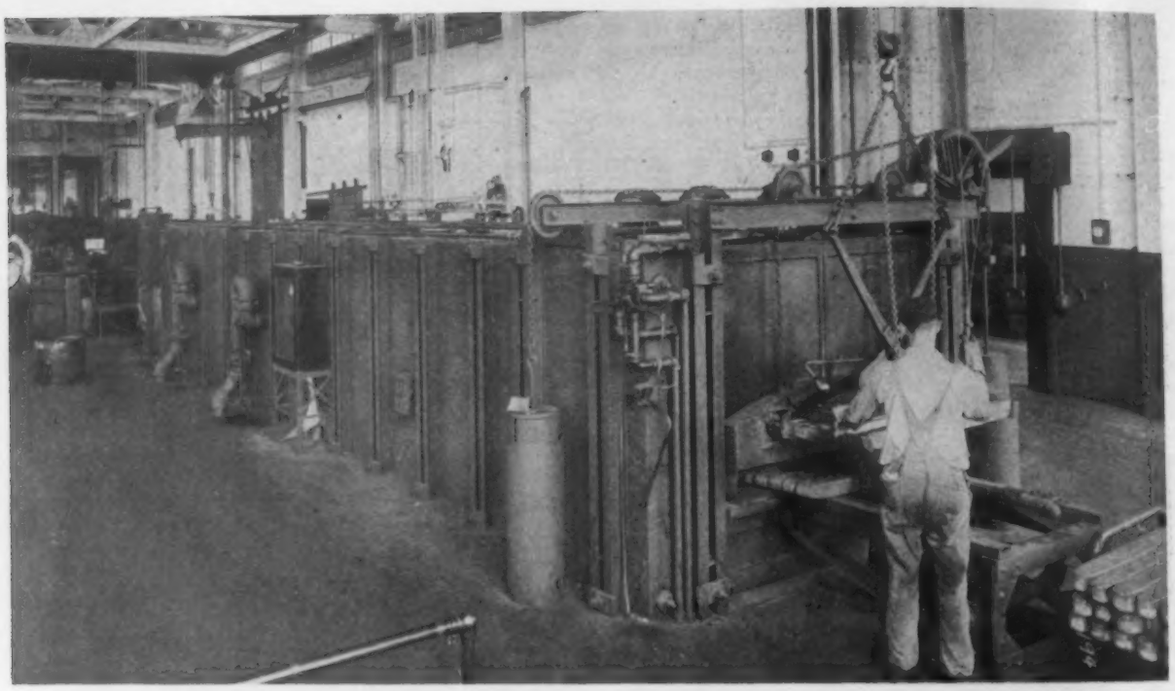
ordinary practice. As a general rule, on heavy sizes 900 ft. per min. represents average practice, although occasionally a speed of 1200 ft. per min. will be found. Cable or intermediate sizes of wire are sometimes drawn at speeds of 1400 to 1700 ft. per min., but the generally accepted practice in drawing fine wire, or magnet size, is in the neighborhood of 1000 ft. per min.

A step taken by the Western Electric Co. engineers was to design, build and experiment with a machine to operate at speeds from 2000 to 3000 ft. per min., and to develop a sensitive take-up device to permit spooling at a constant speed. A spool spindle, driven through a slipping clutch and under the control of a tension arm, solved this problem. An idler pulley is located on the end of this arm, over which the wire passes on its way from the drawing capstan to the take-up spool. The take-up mechanism rotates the core of an empty spool at a speed synchronizing with the wire as it leaves the drawing capstan. As the layers of wire pile up on the spool, thus tending to increase the speed, the wire running over the idler on the tension arm tightens and compresses the arm against a spring adjusted for the proper tension of the gage of wire being drawn. This reduces the pressure of the clutch driving the take-up spindle and permits it to readjust its speed to that of the capstan.

The sensitiveness of this device can best be illustrated by considering the requirements to be met when drawing No. 42 B. & S. wire at a speed of 2000 ft. per min. The breaking strength of wire of that diameter is in the neighborhood of 170 grams and the pull required to draw a No. 41 wire through a No. 42 die is about 87 grams.

Each 10-die, heavy wire-drawing machine of the Hawthorne (Western Electric) design occupies a floor space of 270 sq. ft., including working and storage area, as compared with 480 sq. ft., for the machines commonly used on this work. Common practice for 10-die intermediate machines, operating at 1000 ft. per min., is to allow 130 sq. ft. of floor space, as compared with 70 sq. ft. for a Hawthorne 12-die, multiple-head machine, which operates at more than twice that speed. The

Semi-Automatic Rod Coilers Are Unloaded by Lift Cages, and Pushers Deliver the Bundles to a Conveyor. General view of rod mill



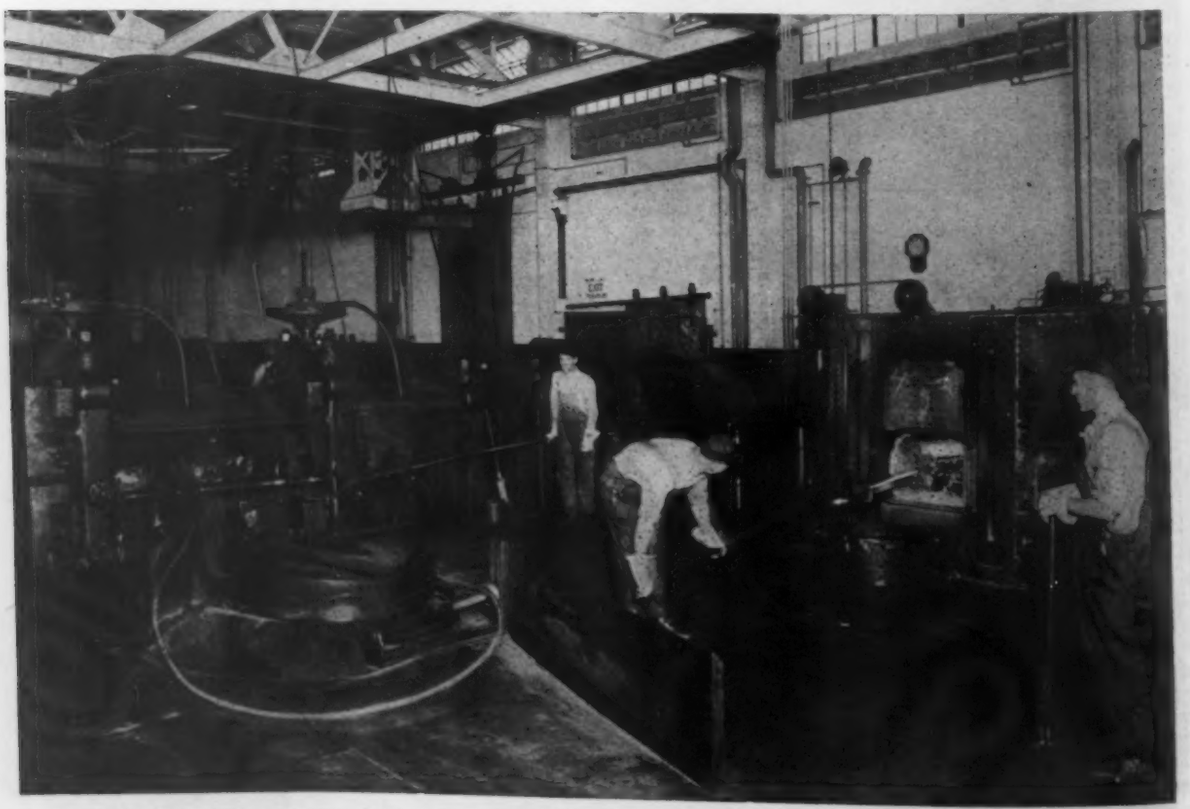
Entrance End of Billet-Heating Furnace, Which Is Oil Fired. The pusher is operated by compressed air

Hawthorne magnet-wire drawing machine is a high-speed, 12-die, multiple-head unit which occupies 70 sq. ft. of floor space, including operating area. The construction of these machines and the use of overhead monorail equipment for transporting wire has resulted in an enormous saving of floor space in this mill.

Dies used for drawing heavy wire are circular, chilled cast iron, cast with a tapered hole and reamed to the desired size. As the dies wear they are reamed to the next larger size and used again. For wire sizes smaller than No. 16, and as fine as No. 42, diamond dies are used. All dies are lubricated while in use by a wire-drawing compound, consisting of a mixture of soap, tallow and water. From information gathered at the Hawthorne Works it appears that about a constant number of million feet of wire can be expected from a properly lubricated die, irrespective of the drawing speed. Under high-speed conditions the die naturally runs a shorter time, but tonnage of a satisfactory quality is the important item and not the time between changing dies.

Annealing with Aid of Water

Two types of annealing furnaces are used at the Hawthorne Works. The one consists of an oil-fired furnace which can be moved over horizontally to cover a sunken elevator or charging platform. This elevator ordinarily stands flush with the operating floor and is surrounded by a water box. The coils or spools of wire are placed on the elevator, which is then lowered



A Repeater Is Used Between the Fourth and Fifth Passes of the Roughing Mill (Left Foreground). At right, heated billet coming from furnace

into the water and the furnace is moved to cover it. The elevator is then raised so that its charge is exposed to the heat of the furnace. The water bath serves two purposes, first to exclude all air prior to the entrance of the wire into the furnace, and further to cool the wire after it has been maintained at a proper temperature for a given length of time. If only a small amount of air reaches the wire during annealing it will become a blue-black color.

A special furnace has been developed at the Hawthorne works for annealing wire on spools. The spools are placed in perforated baskets which are immersed under water to displace air. The baskets are then charged into the oil-fired furnace at a specified time interval. At the opposite end of the furnace the loaded baskets pass to a cooling tube from which air is excluded by means of steam jets. When the spools are finally discharged, the wire is bright and dry and can be stored for months without corrosion.

As in the rod mill, all electrical equipment for the wire mill is under push button or remote control. The heavy wire-drawing machines are driven through silent chains by individual motors mounted in the basement. All electrical control apparatus is also in the basement. The fine wire machines are driven by individual motors mounted on the machine frames. Wire lubricant, carried in large concrete vats in the basement, is pumped to the machines, from which it drains back to the vats.

Of general interest are the tunnels in which are laid hot and cold water, gas, air and steam lines and the power cables. A tunnel extends from the east basement room under the rod mill to the room that houses the drives for the four rod coilers, the coiler-control boards, the finishing-mill control board and the power panel for the rod mill. Another tunnel connects this room with the basement under the wire mill.

Altogether, the design and arrangement of this mill provide not only advanced practice as to quality and quantity of product, but assure good working conditions and ease of maintenance.

Uniform Cost Accounting in the Foundry

"The manufacturer who does not keep every department of his business up-to-date and his management on its toes will share Dempsey's fate," said E. W. McCullough, manager department of manufacture, Chamber of Commerce of the United States, in advising foundrymen that a proper method of cost accounting, next to initiative, is the secret of producing commodities in any quantity at the lowest cost. Mr. McCullough delivered one of the principal addresses before the session on foundry costs at the recent convention of the American Foundrymen's Association at Detroit.

Defining cost accounting as "the science or process of tracing every dollar of expenditure in business to its most economic use in the determination of values," Mr. McCullough said that a cost system which in its operation fails to find and eliminate waste and expedite production should not be called a cost system today.

He recommended uniform cost accounting for each industry as differentiated from the individual cost finding methods which manufacturers may employ. Only by uniform methods, he said, can cost comparisons between competitors or members of an association be made, and such comparisons, he added, have been pronounced legal if the purpose or results are not used unlawfully.

Mr. McCullough said he was aware of some of the conditions which make it difficult to establish cost systems in the foundry industry, but he pointed to other industries in which difficulties just as great had been overcome. Among the organizations he mentioned which have adopted uniform cost finding methods are two in the metalworking field, the American Drop Forging Institute and the American Malleable Castings Association.

Two papers on cost accounting well worth the attention of all foundrymen were mentioned by Mr. McCullough. One was "Advantages of a Foundry Cost System," by Robert E. Belt, Cleveland, published in THE IRON AGE, Nov. 24, 1921, and the other was "Cost Finding in a Foundry," a paper prepared by W. J. Corbett, Chicago, and read at the 1924 meeting of the American Foundrymen's Association.

Mr. McCullough offered the services of the Chamber of Commerce of the United States in assisting groups of foundrymen to arrive at proper cost accounting methods and summarized his recommendations as follows:

> That for success, profit and continuation of the industry the best cost accounting is necessary; that individual cost accounting is good, but in a competitive line uniform cost accounting is better and promotes intelligent competition; that the foundry industry, because of the frequent presentation of costs at many conventions and other meetings by men of the industry and others who know, needs no further proof to guide its judgment; that the present is most opportune for beginning the construction of a uniform cost system, but requires the concurrence of executives and those in charge of production.

Gear Makers to Meet at Briarcliff

In addition to addresses on a variety of topics of interest to the industry, reports of the several technical standardization committees will feature the meeting of the American Gear Manufacturers Association, to be held at Briarcliff Lodge, Briarcliff Manor, N. Y., Oct. 14, 15 and 16.

The addresses include the following: "Do We Know Our Business?" by W. H. Diefendorf, Diefendorf Gear Corporation, Syracuse, N. Y.; "Conditions Governing the Use of Hypoid Gears," by F. E. McMullen, Gleason Works, Rochester; "Recent Developments in High Speed Chain Drives," by George M. Bartlett, Diamond Chain & Mfg. Co., Indianapolis; and "America—the Keeper of the Keys," by C. E. Stuart, president of the Central Alloy Steel Corporation, Massillon, Ohio.

The evening of Oct. 14 will be devoted to a technical standards meeting, under the chairmanship of B. F. Waterman, engineer, Brown & Sharpe Mfg. Co., Providence, and chairman of the association's general standardization committee. A golf tournament has been arranged for the afternoon of Oct. 15.

Visiting Foreign Foundrymen

Eighty-two of the European foundrymen who are touring the United States and who attended the International Foundry Congress at Detroit spent Wednesday and Thursday of last week in Cleveland, where they inspected a number of foundries, plants making foundry equipment, steel plants and blast furnaces and iron ore docks. Plants visited include the Otis Steel Co., the Wellman-Seaver-Morgan Co., Osborn Mfg. Co., Aluminum Castings Co., W. W. Sly Mfg. Co., White Motor Co., Allyne-Ryan Foundry Co., Cleveland Cooperative Stove Co. and Johnston & Jennings Co.

The visitors were guests at a banquet at the Union Club. The banquet speakers included S. W. Utley, the new president of the American Foundrymen's Association; City Manager William R. Hopkins; James R. Garfield, formerly secretary of the interior; Fred W. Ramsey of the Cleveland Metal Products Co., Franklin G. Smith, president and manager of the Osborn Mfg. Co., who was the general chairman of the Cleveland committee having charge of the arrangements for the visit of the European foundrymen, and E. V. Ronceray, vice-president Association Technique de Fonderie de France, who responded in behalf of the visitors.

The visiting foundrymen were also entertained with a luncheon Wednesday at the Hotel Statler and the following day they were guests at a luncheon given by the Penton Publishing Co.

Beginning the evening of Oct. 11, by invitation and courtesy of the Travelers Insurance Co., Hartford, concerts by the band and orchestra of the New Departure Mfg. Co., Bristol, Conn., will be broadcast from station WTIC, Hartford. These concerts will be given fortnightly throughout the winter.

Discuss Open-Hearth Problems

Steel Plant Operating Officials Meet with American Institute of Mining and Metallurgical Engineers at Pittsburgh

FEW of the varied activities of the American Institute of Mining and Metallurgical Engineers escaped attention at the 134th meeting of that organization in Pittsburgh, Oct. 5 to 9, inclusive. Held in conjunction with the meeting, but as a separate conference, was the fourth meeting of the Open-Hearth Committee, which was organized in Pittsburgh early in 1925 and since has had meetings in Cleveland and Chicago. It was a very full week and one of interest for those participating, because there was time outside of the sessions for social activities, and the program provided for one full day for plant visitations, while on Oct. 8 a trip to the experimental coal mine and explosives experiment station of the United States Bureau of Mines, Bruceton, Pa., gave many of the members a chance to see what the government is doing in making coal mining safer for the miners. The technical program was well diversified, but leaned heavily to iron and steel, because, beside the open-hearth committee conference there were sessions of the iron and steel committee of the institute. Coal, coke and gas had their places in the program.

The conference of the Open-Hearth Committee had a registration of almost 70, largely of men who direct the operation of open-hearth furnaces and of steel plants in various parts of the country. Technical sessions were held morning and afternoon on Oct. 5 at the William Penn Hotel, and on Oct. 6 at the Pittsburgh Station, United States Bureau of Mines, while Oct. 7 was given over to a visit to the plant of the Pittsburgh Steel Co. at Monessen, Pa. This plant was selected because at it there is both top and bottom pouring of steel, the steel for its tube plant at Allenport, Pa., now being bottom poured.

Plans for the Future

C. B. Collingwood, Stanley Works, Bridgeport, Conn., chairman of the subcommittee on open-hearth design, indicated that little progress had been made in securing blue prints or drawings of existing open-hearth furnaces. From these it is hoped to develop a standard type furnace which can be operated with gas, oil or tar as the fuel. Out of the meeting of this subcommittee, held following the technical session on the afternoon of Oct. 6, it is expected there will be a definite report for presentation at the next meeting.

Invitations for suggestions for papers to be read at the next meeting by Chairman E. A. Whitworth brought out that there was interest in more information about forging steel, reference being made to the series of articles on rimmed steel by Henry D. Hibbard, recently published in THE IRON AGE. The relation of hot metal to quality steel was offered as a subject for a paper, with an invitation to be extended blast furnace men to participate in the paper and its discussion. An article by Kilby in THE IRON AGE, on pouring steel in England, which indicated that teeming speed was more important than temperature was the basis of a suggestion for a paper on this phase of steel making. Furnace bottoms and alloy steels also were advanced as subjects to be treated in formal papers.

J. V. W. Reynders, former president American Institute of Mining and Metallurgical Engineers, who sponsored the formation of the Open-Hearth Committee, was present at the closing technical session, and reviewed his recent trip to Russia in connection with manganese ore matters. He said there was enough known manganese ore to meet the requirements of the world for only 40 or 50 years, and told of the unsuccessful efforts of German steel makers during the war to develop a substitute. His observations and experiences in Russia were covered at some length in THE IRON AGE of Sept 30. He urged adherence to the cooperative purpose of the committee and suggested the appointment of a committee to study the matter so that the programs of the meetings would be consecutive.

Yield with Light versus Heavy Scrap

Paul H. Shaeffer, until recently open-hearth superintendent of the United Alloy Steel Corporation at Canton, Ohio, in his paper, "The Basic Open-Hearth Charge," indicated a difference of as much as 4 per cent in the ingot yield between charging light and heavy scrap. In the discussion, which was a symposium of experiences as to yields when light and heavy scrap were charged, Dr. C. H. Herty, Jr., United States Bureau of Mines, supported Mr. Shaeffer by saying that there was four times as much oxide in light as in heavy scrap.

Carl W. Peirce, Mansfield Sheet & Tin Plate Co., Mansfield, Ohio, said his experiences had indicated negligible losses in using light instead of heavy scrap. At his plant, turnings, bundled sheet scrap and pit scrap were used, and, estimating the latter at full weight, there had been an average yield over an extended period of 87.5 per cent. The practice was to charge two boxes of coke breeze, 10 per cent of cast scrap, 30 per cent pig iron in addition to the light scrap. R. L. Ashbaugh, West Penn Steel Co., Brackenridge, Pa., said his experiences and results were almost identical with those of Mr. Peirce. L. F. Reinartz, American Rolling Mill Co., Middletown, Ohio, reported a yield of 89.5 per cent from a charge that included no heavy scrap, but that the light scrap was clean. Frank A. King, Weirton Steel Co., had comparable experiences and results to those of Mr. Reinartz. R. L. Cain, Bourne-Fuller Co., Cleveland, said yields were about the same regardless of the type of scrap. Kenneth C. McCutcheon, American Rolling Mill Co., Ashland, Ky., said the metallic charge was the true basis of measuring yield.

A request by Mr. Reinartz for an explanation of the term, "when is a heat melted," brought the answer from several, "when the lime is up." W. E. Buck, National Enameling & Stamping Co., Granite City, Ill., said that his tests had showed that magnesium oxide acted as a slag thickener.

Use of Canadian Magnesite

M. C. Booze, vice-president in charge of research, Charles Taylor Sons, Cincinnati, was unable, on account of illness, to present a paper, "Checker Brick and Their Service," at the morning session of Oct. 6. In his stead W. J. McCaughey, refractories section, United States Bureau of Mines, at Columbus, Ohio, read a paper, "Mineralogical Composition of Open-Hearth Bottoms and Its Relation to Slag Attack." He told of tests of a furnace bottom laid with Canadian magnesite during the war period when Austrian magnesite was unobtainable, the samples coming from a furnace which had produced 19,000 tons of steel in 200 heats. The analysis of the test pieces showed silica of 2.2 per cent, iron oxide and alumina, 8.2 per cent, lime 4.6 per cent and magnesium oxide 85 per cent. Comparison with the magnesite used at the time indicated mineralogical changes in the bottom. Analysis of the magnesite used showed silica content of 6 per cent, iron oxides and alumina of 8 per cent, lime of 18 per cent and

magnesium oxides of 67 per cent. The absorption of magnesium oxide by the bottom is noteworthy, Dr. McCaughey said.

The test made by Dr. McCaughey is unique and one with which most open-hearth men are unfamiliar from a scientific standpoint. Direct discussion of the paper consequently was rather limited, but there was considerable interest in the assertion of the author that if positive results were not available, it was because samples of bottoms submitted usually were from the zone of repairs in the bottom, and that samples from the sound sections were desirable. There were promises that he would be furnished with the desired samples. Discussion of methods of building furnace bottoms disclosed no departure from the orthodox method of burning in the bottom and the use of slag as the bonding element.

G. M. Demorest, United States Bureau of Mines, Columbus, Ohio, spoke briefly on the effect of the refractories on steel making, referring particularly to the effect of iron oxides on the furnace bottoms.

Absorption of Sulphur During Melting

At the closing technical session C. H. Herty, Jr., physical chemist, Bureau of Mines, Pittsburgh, read in abstract a paper, "Absorption of Sulphur During Melting in the Open-Hearth Furnace," and J. M. Gaines, Jr., Bethlehem Steel Co., Lackawanna, N. Y., presented a paper, "Desulphurizing Action of Manganese in Iron," the joint effort of himself and Dr. Herty. Dr. Herty unfolded, by means of diagrams, the effect of the sulphur in the gas on the sulphur content of the metal during melting. A high sulphur gas passes on a large amount of sulphur to the scrap, while the reverse was true of low sulphur gas, and other conditions being constant, the sulphur in the steel will be proportional to that element in the fuel used. Producer gas, coke oven gas, coke oven gas and tar in combination, and tar alone were burned in securing the data for the paper.

In the joint paper of Dr. Herty and Mr. Gaines, the latter reviewed experiments to determine the extent of and the controlling factors in sulphur elimination in the ladle. Several casts were sampled at the blast furnace and again when the ladles were being emptied, the samples at the terminal points being taken as close to the middle of the ladle as possible. The following conclusions are drawn:

In the ladles of molten pig iron the equilibrium between manganese and sulphur at 2400 deg. Fahr. is expressed by the relation (per cent Mn) (per cent S) = 0.070.

If the product (per cent Mn) (per cent S) is above 0.070 at the blast furnace, elimination of sulphur will take place until equilibrium is established.

If the product is less than 0.070 at the blast furnace, little or no elimination of sulphur will take place.

If blast furnace slag is present in the ladle, sulphur may be reduced from the slag into the metal. If the manganese sulphide eliminated from the iron is poured into the open-hearth furnace, the advantage of desulphurization by high manganese is lost.

Steel Treaters' Secretary to Be Honored in England, France and Germany

William H. Eisenman, Cleveland, secretary American Society for Steel Treating, sailed Saturday, Oct. 9, for England on the steamship Tuscania, being one of a party of ten or more representatives of American trade and technical organizations in various lines who will be the guests of the Cunard Steamship Co., which has arranged for each one of the party to meet groups of men in their own industries in Europe. Mr. Eisenman is the only representative of the steel and metalworking industries.

A dinner will be given in his honor in London on Monday, Oct. 18, this having been arranged by the Cunard line in cooperation with the Association of British Industries. Many prominent steel men will be present. There will be a breakfast at Sheffield, England, Wednesday, Oct. 20, at which Mr. Eisenman will also be the guest of honor. This will be attended not only by 15 or more of the British members of the American Society for Steel Treating, but also by steel plant executives of the Sheffield district.

From England Mr. Eisenman will go to Germany, where he will be the guest at a dinner in Essen on Wednesday, Oct. 27, this having been arranged by Krupp officials and other iron and steel manufacturers of the district. Another dinner will take place in Paris on Monday, Nov. 1, to be attended also by men prominent in metallurgical lines.

Mr. Eisenman will return to the United States Nov. 7 on the Aquitania.

Automobile Trade Remarkably Bright

Automobile sales are gradually declining and production is taking the same course in line with the seasonal trend, says *Automotive Industries*. The market is still, however, above normal and there is now no reason to doubt that the record for the entire year will be well above that of any previous period in the industry's history. Dealers' stocks at the end of August were at the lowest point in recent years, and now it is not likely that total stocks represent more than three weeks supply at current sales rates.

"Production this year," continues that journal, "has ranged about 15 per cent above last, and sales in the corresponding ratio. But the increase has been almost entirely in the domestic market. Foreign business has failed to show the gains anticipated, due mainly to selling difficulties in Europe."

Owen D. Young, co-author of the Dawes plan and chairman of the board of the General Electric Co. and the Radio Corporation of America, was the recipient of the honorary degree of doctor of laws from Lehigh University in Bethlehem, Pa., at the annual Founder's Day exercises on Oct. 6. In the front row, left to right, are William C. Dickerman, vice-president of the American Car & Foundry Co., New York; Dr. Young and President Charles Russ Richards of Lehigh. Back row, left to right, Clarence W. Hudson, consulting engineer of New York; Eugene G. Grace, president Bethlehem Steel Corporation and of the Lehigh Board of Trustees, and Dr. Henry S. Drinker, president emeritus of Lehigh.

Sheet and Tin Mill Well Planned

Simplicity of Equipment Layout and Straight-Line Movement of Material Feature New Plant at Indiana Harbor—Method of Handling Coal Is Noteworthy

BY ROGERS A. FISKE*

THE producing capacity of the Chicago district in sheets and tin plate has been increased 9000 to 10,000 net tons per month through the completion of a new mill by the Youngstown Sheet & Tube Co. at Indiana Harbor, Ind. Among outstanding features of the plant are simplicity of equipment layout and a carefully worked out plan for the progressive movement of materials from one process or one department to another. Standard gage tracks in the yard, and industrial tracks, storage-battery trucks and overhead cranes in the mill are so arranged that in handling materials the number of transfers and length of haul have been reduced to a minimum. The spacing of machinery and the width and direction of aisles are also factors contributing to the efficient movement of products.

The mill is located south of the works which the Youngstown Sheet & Tube Co. purchased June 29, 1923, from the Steel & Tube Co. of America. Separating the two plants is the main line of the Pennsylvania Railroad. The tracks are bridged by a steel structure, which carries electric power cables, gas and steam mains from the original plant. Sheet bars are now rolled in one of the older mills, but later will be supplied from a new 21-in. continuous mill now being built north of the Pennsylvania tracks. Bars are transported on railroad cars, but by providing a dock at the new mill it would be possible, if so desired, to deliver sheet bars by means of boats or barges.

The general layout of the buildings of the new mill is from east to west. A bar-storage building, which is near the Pennsylvania right-of-way, is located conveniently for the receipt of material from the mills north of the tracks. The main mill building parallels the bar storage and is connected with an annealing building by a black-pickling house. A white-pickling building joins the annealing room to a bosh-handling department, which is adjacent to a tinning building. A brick wall, in which are located convenient openings, separates the tinning department from assorting tables in an adjacent warehouse.

The bar storage building is 93 x 504 ft. Three hundred and sixty feet of the building is used for the storage of bars, which are received in 30-ft. lengths. A shear is located near the west end of the building and is connected with the main mill structure by a conveyor. The storage building is served by two roller-bearing, 15-ton, overhead electric traveling cranes, made by the Morgan Engineering Co., Alliance, Ohio. The shear, together with an approach table, a piler and the conveyor, was furnished by the United Engineering & Foundry Co., Pittsburgh. The sheared bars are loaded automatically on crates, which consist essentially of two lengthwise channels tied together by spacers.

Annealing Boxes Are Loaded on Trucks Which Are Pushed on a Transfer Car. The car is moved into the furnace by a storage battery tractor

When a crate is to be loaded with bars, it is picked up by a magnet, placed on the roller conveyor, and moved over a platen, which is located directly below the shear blades. The crate is then raised until it is but a few inches below the edge of the lower shear blade. As the sheared bars drop on the crate, it is gradually lowered until it has a full load of about 1500 lb. The rams are then lowered until the crate rests on the conveyor rolls. The raising and lowering of the crate is by means of hydraulic rams, actuated by a pumping unit which is electrically operated under the control of the head shear operator. On the conveyor, the rolls of which are set in motion, the loaded crate is moved over a Howe scale. After the net weight is recorded, the crate is again lowered to the conveyor, which

*Western Editor, THE IRON AGE, Chicago.

A Pair and a Sheet Furnace Are Built as a Unit. The industrial-type stokers are motor driven. The furnace hoppers, shown above the stoker hoppers, are filled by overhead crane

delivers it to an aisle of the main mill building, a structure which is 1104 ft. long.

Adjacent to the aisle in a leanto, which extends along the north side of the main mill building, are located pair and sheet furnaces. Two 10-ton, overhead electric, Morgan Engineering Co. cranes with a span of 31 ft. 6 in. operate over the aisle, being used to convey loaded crates to the charging side of the furnaces, to distribute coal to the furnaces and to return empty crates to the passageway leading into the bar storage or shear room.

From the crates the bars are unloaded by hand and placed on an electrically operated pusher serving each pair furnace. The pushers, made by the Costello Engineering Co., Pittsburgh, are provided with limit switches at the end of travel. Each furnace is fired by an industrial stoker, supplied by the Riley Stoker Corporation, Worcester, Mass. Motor drives for the stokers are located beneath the rams and in the settings. Forced blast is furnished by motor-driven fans, one for each four furnaces. Interconnecting flues are not provided. A portion of the blast air is by-passed through the stoker motors and discharged into the room. A sheet furnace, also fired by a Riley industrial-type stoker, is adjacent to each pair furnace, being separated from it by a single partition wall. The furnaces operate under natural draft.

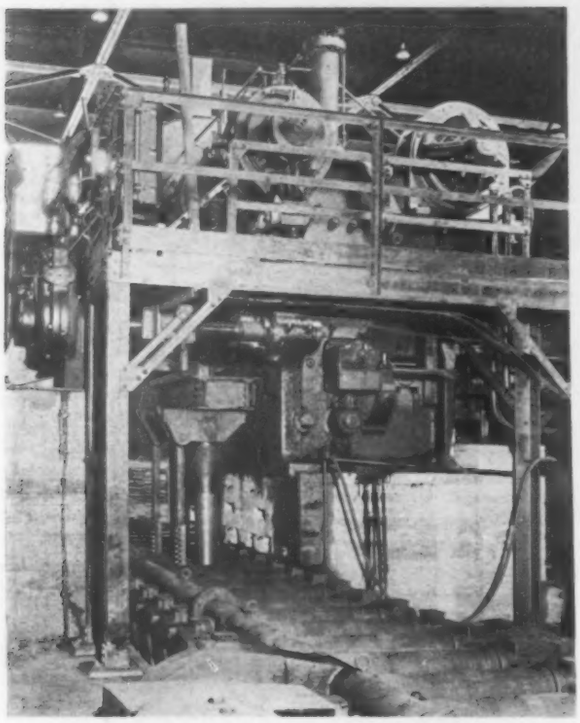
Special precautions have been taken in the interests of the comfort and convenience of workmen about the furnaces and the mills. Air is taken from outside the building through two systems, one overhead and the other underground. The overhead system discharges air through a flared nozzle located over the charging door of each sheet furnace. The underground system blows air through a number of adjustable floor stands located at the furnaces and the mills. In front of each sheet furnace is a water-cooled floor plate, and over the doors on the mill side of the sheet and pair furnaces are hoods connected to stacks, which collect and draw off furnace gas which would otherwise escape to the room whenever the doors were opened.

Coal for the furnaces is delivered by railroad cars

The Black Pickler, Which Is Served by a Monorail System, Is Located Between the Main Mill Building and the Annealing Department

to a track hopper, from which it is removed by a flight conveyor and delivered to a skip hoist. The skip bucket discharges the coal into a 150-ton overhead steel bunker, located near the north wall of the furnace aisle. A spout, extending from the bunker through the roof of the building, is located above the crane runway in the furnace aisle and on a line with the stoker hoppers. From the spout coal is drawn into distributing hoppers, one of which is mounted on each crane. The cranes move from one furnace to another, filling the furnace hoppers, which store about a day's supply of coal. From the furnace hoppers coal is fed by gravity to the stoker hoppers as required.

Clinker is raked out over the dead plate to the floor. Ashes from the furnace pits are raked up to the stoker floor and are shoveled, with the clinker, into small dump cars standing on a nearby industrial track. The



Hydraulic Rams Hold the Sheet Bar Cradle a Short Distance Below the Shear Blades. When the cradle is loaded, it is lowered to the conveyor, which transports it to the pair furnaces

cars are hauled by a storage-battery tractor to a pit north of the building, where they are dumped. A skip loads the ashes into railroad cars.

Three Motors Drive 24 Mills

The rolling equipment includes 24 28-in. hot mills, which were furnished by the United Engineering & Foundry Co. The mills are arranged in three units of eight each, and space has been provided for an additional unit at the east end. Each unit is separately driven by a motor so located that four mills stand at each side of the drive. Units Nos. 1 and 2 are driven by 2500-hp. 252-r.p.m. Westinghouse motors, using 2300-volts 60-cycle 3-phase current. These motors were on hand, which accounts for the fact that they are connected with 1800-hp. drives. Unit No. 3 is driven by an 1800-hp, 2300-volt Allis-Chalmers motor. The drives, each rated at 1800 hp., were built by the Mesta Machine Co., Pittsburgh. Each pinion is designed with 19 double-helical teeth, 3½-in. circular pitch, 36-in. face. The pitch diameter is 21.167 in., and the teeth are of the 20-deg. involute type. Each gear has 162 double-helical teeth and a pitch diameter of 180.481 in. Doublers were supplied by the Aetna Foundry & Machine Co., Warren, Ohio.

Opposite each mill unit in the main bay are eight 40-in. and two 52-in. squaring shears, made by the Streine Tool & Mfg. Co., New Bremen, Ohio. The mills and shears are served by 15-ton 70-ft. span cranes, built by the Morgan Engineering Co. A leanto south of the main bay is used as an opening floor. Cranes are not provided in the leanto, material being moved on trucks by means of storage-battery tractors.

The building which houses the black-pickling equipment connects the hot mills with the annealing room. With the addition of a fourth hot-mill unit, the black pickling room will be centrally located for the movement of sheets passing from the mills to the annealing furnaces. The black pickler is of the Gray type and is designed to take the full output of 32 hot mills.

The annealing room parallels the hot mill building and the black-pickling department. This structure is divided lengthwise into three bays, the north one being used for storage. At the west end of the middle bay is located a black-annealing furnace and at the east end are 10 24-in. cold mills, which will be increased later to 12. A white-annealing furnace is in the south bay.

The cold mills were furnished by the Hyde Park Foundry & Machine Co., Hyde Park, Pa., and the drives were made by Fawcus Machine Co., Pittsburgh. The mills are arranged in groups of five each and are driven by two 100-hp, 2300-volt Allis-Chalmers motors.

Annealing Trucks, Transfer Car and Tractor Used in Charging Furnace

Parallel to the black-annealing furnace is a standard-gage track for trucks used in charging the furnace. The trucks, when loaded with annealing boxes, are moved, one at a time, by a storage-battery tractor to a transfer car operating in a pit. The tractor then runs down a ramp and moves the loaded transfer into the charging end of the furnace. The furnace doors at both ends are electrically operated and are so interconnected with hydraulic units which furnish power to the charging pusher that a cold truck cannot be forced into the furnace until the doors at the opposite end are open. The furnace is 328 ft. 4 in. long and is of the gas-fired, muffle type. The gas burners are located near the center, and the burnt gas passes to the discharge end of the furnace, where it passes through an air preheater before escaping to the stack. The gas pressure is raised by boosters. A sealing chamber is provided at the discharge end of the furnace.

The white-annealing furnace is similar to the one just described except that it is 280 ft. 4 in. long. Two 15-ton Morgan Engineering Co. cranes serve the black-annealing furnace and the cold mills, and two similar units operate over the white-annealing furnace. Adjoining the annealing building, near the west end, is the white pickler department, which serves as a connecting link with the bosh-handling building. The white pickler was made by the Mesta Machine Co.

Finishing Equipment Includes 19 Tinning Machines

Nineteen tinning machines, made by the Aetna Foundry & Machine Co., have been provided. The tin pots are gas-fired and are covered by a reinforced concrete hood for the removal of gases. The finished product is moved through convenient openings in the tin house wall to assorting tables, which are placed near the north wall of the warehouse. A shipping track extends along the south side of the warehouse.

A roll shop, which is an extension built on to the west end of the bar storage building, is equipped with two Landis Tool Co. roll grinders, two Mesta Machine Co. lathes, a 10-ton Morgan Engineering Co. overhead traveling crane, and storage racks for rolls.

Electric cables are underground throughout the plant, and they are not brought to the surface except where connections are required at the various buildings. Each department is separately metered. Current is generated at 2300 volts at the old plant and is stepped up to 11,000 volts for distribution. In an outdoor substation of the new plant the voltage is stepped down to 2300 and 440 volts. The main mill motors are operated on 3-phase 60-cycle current at 2300 volts, while miscellaneous motors use alternating current at 440 volts. All motors, including those on the cranes, but with the single exception of those on the mill drives, are designed with roller bearings. The crusher, shear, fan and common drives, such as in the machine

Special Attention Has Been Given to the Comfort of the Operators. Two systems of ventilation are employed—overhead and underground

shop, are powered with alternating current motors. Motors on the cranes, the skip hoist, the stokers, the pushers and the tinning machines are all designed for 230-volt direct current, which is provided by motor-generator sets located in the indoor substation at the tin mill. The crusher motors were built by the General Electric Co., Schenectady, N. Y. Miscellaneous alternating-current motors and those of mill type were made by the Westinghouse Electric & Mfg. Co., Pittsburgh. Direct-current motors, except on the crusher, were supplied by the Reliance Electric & Engineering Co., Cleveland. Electrical control equipment was made by the Westinghouse Electric & Mfg. Co. The main mill motors are under push button control. A stop button is located near each mill, and one master stop and start control is provided in a control house opposite each drive group.

Special Attention Given to Illumination

Special consideration has been given to electric lighting. Because of the length of the feeders, current for illumination is distributed at 440 volts. At convenient points transformers step the current down to 110 volts for use in the lamps. Lighting fixtures, of the Holophane aluminum-covered type, made by the General Electric Co., have been installed throughout.

The tractors and trucks used in the plant, which were made by the R. & L. Baker Co., Cleveland, are equipped with Edison cells. A battery charging station has been provided and arrangements have been made so that the batteries may be charged either from a special motor-generator set located in the substation, or, in emergency, directly from the 230-volt direct-current bus.

Wide Interest in Management Week

Progress in waste elimination is the topic of the 1926 Management Week, an institution established by the American Society of Mechanical Engineers. At different times in the week of Oct. 25 to 30 meetings will be held in probably 205 cities. Reports are also that more enthusiasm is evident in respect to the plan of the nation-wide focussing on industrial management than in any of the previous four years. Stress is laid on the fact that it has sales, financial, commercial and social aspects, and consequently has won the support of many non-technical groups.

September shipments of electric industrial trucks and tractors, as reported to the Department of Commerce by the nine leading manufacturers in the industry, were 97, as compared with 97 in August. The total for the nine months this year is 1042, against 1079 for the same period last year.

Each Hot-Mill Motor Drives Eight Mills, Which Are Arranged So That There Are Four Mills on Each Side of the Motor

German Industry Striding Forward

Capital and Labor Facing Facts in a Practical Way —Plant Managers Value American Methods— Greatest Potential Producer in Europe

BY JOHN CALDER

VISITING Germany in the first days of August this year one finds nothing of the empty streets, silent factories and careworn, discouraged people reported less than two years ago. Here, instead, are sane minds in sound bodies after eight years of progressive disillusionment. It is a pleasant surprise to economists, engineers and social inquirers.

Germany in the height of the inflation at the end of 1923 stabilized her temporary new currency, the rentenmark, at the unprecedented shrinkage of one trillion paper marks each. She did it almost between a Saturday and Monday. It was an excruciating operation without anesthetic performed by the firm and wise Dr. Schacht, who had almost dictatorial powers in the Imperial Bank. The operation was followed by six months of equally able nursing, after which the rentenmark was retired in favor of the gold par reichmark and Germany was on her feet financially. The only three powers today with stable currencies—the United States, Britain and Germany—owe much to the unyielding, farsighted policies of their financial guides. We found the patient pale but convalescing, brave and cheerful, though many individuals have been injured beyond recovery.

Republic Making Its Way

The morale of cities and villages slumped badly in the financial debacle but they are once again the most uniformly clean and orderly in Europe. The republic is an actuality and apparently a permanency. The question yet to be decided is, "Shall it be a conservative or a radical republic?" And all signs point to the former. Before the war Germany had the most efficient and economical bureaucracy in Europe but "the spoils to the victors" ruled in the revolution and the republic has yet to prune down the more expensive bureaucracy it has created.

Not yet is Germany's administrative machine on the economical model of its industries, and this could hardly be expected when manned, as it had to be at first, by amateurs. But the old line of officialdom, to the manner born, is flocking back, convinced that the republic is here to stay and eager to serve under it. Returning picnic parties of different political blocs encounter outside our hotel at Düsseldorf on a Sunday evening, engage in fist fights, shed some blood and retire with honor satisfied. Great marching clubs of young men cheered on by the populace cross the bridge head at Cologne by thousands on holidays to train in the country and one senses here, as nowhere else in Germany, the deep aversion of the natives, and the peaceful Rhinelanders in particular, to occupying foreign troops always in evidence. All is peaceful and correct outwardly, but the able mayor of Cologne has no sinecure. Visitors from the United States are plainly in favor. The reason given is frankly that the German people are wholly satisfied that the United States, at least, has no designs upon them and wants nothing for herself.

Industry Regulating Production

We visited Cologne, Düsseldorf, Leverkussen, Essen, Berlin, paying especial attention to plants, methods of management and labor conditions, and everywhere were met by the punctilious courtesy for which German employers and employees are noted. Krupp, Bayer, Ludwig Löwe, Borsig and A. E. G. displayed their treasures freely and most hospitably and did so under the direction of officials of the highest class. We found large and small employers cooperatively regulating production and competition in all basic lines and showing a far-sighted unselfishness. Domestic trade was very dull and there were over 1,500,000 unemployed, but there was no parade of that fact and perfect order. Great versatility was being exhibited in adapting productive machinery to the individualistic demands of the domestic market of widely scattered foreign customers. The ingenuity and diversification of effort required and supplied today by the competent technical staffs of the German plants we visited would drive the mass productionists of the United States, with their much narrower experience, crazy. An ample supply of the long and well-trained mechanic, that scarce article with us, was everywhere in evidence and the schools for apprentices in all the large plants were no forcing houses, but instead a prolonged and liberal mechanical and industrial education which the boys seemed to appreciate and enjoy. No German youth yet has indulged the thought that the world owes him a living and the way he goes about to ensure that it shall not be lacking is a caution.

No American Trick Missed

We observed closely the detail of plant practice. Not an American trick is missed; they know all about it. Wherever applicable with profit, western appliances and methods are adopted. Ludwig Löwe's and the A. E. G.'s procedure, for instance, was indistinguishable in detail from the very best American practice and much better than a good deal of it. Borsig, a locomotive builder, one of 23 such concerns in Germany, who are only permitted under the reparations regulations to manufacture 125 locomotives annually among them, turns around and divides his staff into 16 highly competent engineering, manufacturing and selling divisions; makes each of them a self-supporting unit which goes out everywhere in the world to take orders for every description of engineering work *except locomotives* which nobody wants. And they get these orders through infinite pains; keep the fine establishment and staff in being and so capitalize the day of small things.

Krupps Transformed

The Bayer company, also, running half capacity on its pharmaceutical and dye-stuff products, is a model of intelligent adaptation of means to present reduced circumstances. A visit to Krupps revealed a proud, still self-sufficient concern, with a long tradition, literally beating swords into ploughshares, cash registers, agricultural machinery—anything in fact in metal—using only 15,000 people in its long chain of plants instead of 105,000 as in the heyday of its fame. Today its huge tools in use seem like a steam hammer cracking a nut and its rolling mills have large intervals of waiting between blooms. Its equipment has

distinctly more of old types than desirable, but capital is scarce and idle special tools are a heavy burden and they must make the most of things.

Mass production in German industry is still in disfavor with the people, to whom it signifies the standardization of their desires. But associations have been formed to educate the public in the advantages of a reasonable amount of uniformity in common articles and the German employers and Government are equally busy among manufacturers to that end.

Employers and Employees

More than in any other country employers take the syndication of workers as a matter of course and organize in very thorough fashion to deal with them. German workers, as a whole, continue to show more docility than those in the United States or Britain. They appear very generally to value stability of status more than equality of opportunity and very early settle into grooves of usefulness in which they are highly competent though greatly circumscribed socially. At Spandau and some other northern centers the radical socialist and communist types of worker are encountered but, though noisy, they are not numerous and a full dinner pail for a very willing worker would go far to reduce them to the vanishing point. The German employer is strictly conditioned also by laws prescribing his treatment of the worker who, as a rule, is possessed by no social theory that makes him unhappy. On the whole, however, the employer with his relation to huge combines is distinctly "on top," but uses his powers with a paternalism not displeasing to the German worker of today.

The Problem of Reduced Resources

We find Germany today endeavoring to make what remains of her geographic resources, after territorial war losses, meet the demands of a population which last summer had regained its pre-war numbers, despite the loss through war of 10 per cent of her population as of 1914 and of 13 per cent of her land.

The present reduced area would in 1910 have shown 319 inhabitants to the square mile, but today it has to carry 335 per mile to accommodate over 65 million people. Germany even before the war had to import over 17 per cent of her food and today she has only two courses before her, namely: to import more food than ever or to make the homeland bear the whole food burden. It is apparent that she has resolutely taken up the latter course. Everywhere one finds increase of land in cultivation. It is true that much of that land is of inferior fertility, but it is being gradually improved, using every resource known to science.

In addition, intensified use is being made of that land; internal waterways are being deepened and new canals are under construction. Germany is increasing the development of her bituminous coal and lignite deposits and of her potash and ore beds. Hydroelectric power is being increased as well, by utilizing for the first time numerous abrupt rapids in the natural gradients of streams hitherto neglected for more obvious sources. She is also creating valuable artificial heads through impounding waters in the mountainous regions behind high dams. All over the land one sees these new power sources in evidence through a network of high tension lines distributing economical current to industry. Already 1,200,000 hp. has been developed out of a potential water power of 6,000,000, of which Bavaria alone can supply 2,000,000 hp. Perhaps the most significant factor of all is the recovery of her labor morale and the increase in its efficiency following upon the gradual change from a consciousness of loss and fear of indefinite bondage to a belief that there is hope.

The Cartel Development in High Favor

The feverish reconstruction of German industry in the inflation period of the early years after the war led many people to believe that in the rebuilding of its economic life "every man for himself" would be the rule, and that the "cartel" would not have its old importance as the preferred means in that country of adapting production to sales. But the last three years have shown that such prophecies were wrong. The submergence of monopolistic agreement by a highly speculative industrialism in Germany proved to be purely temporary. The American observer of her industrial life today finds that after the fall of the individualistic Stinnes and the departure of the glory of the self-sufficing Krupps and others in like case, the cartel movement has taken a rapid upward swing and is in high favor.

In large business alone in 1924 there were more than 3100 cartels. These have steadily increased in number and to their tendency to cause higher prices is due some of the increased cost of living in Germany. But there is no loud outcry about it. It is accepted as good for the nation and the German people have always been remarkably docile in this respect.

Germany's Economic Recovery

Before the Armistice it was sometimes said that as engineers had got the world into the war it was their duty to get it out again. Meaningless in rhetoric then, it was nevertheless a truth applicable to after-the-war conditions, for, getting down to fundamentals, the future of commerce between Germany and other countries depends upon the relative energy and ability of their respective engineers.

The world's manufacturing capacity, in its machine shops in particular, was enormously increased during the war, but the destruction of capital values and the stoppage of useful production and of savings that accompanied the hostilities have both reduced world purchasing power and disorganized the engineering mechanisms that are calculated to restore it.

IN this fifth article dealing with his investigations in Europe as a member of the American Management Mission, Mr. Calder pays a tribute to the way in which German industrialists have met the staggering problems imposed by defeat. The ingenuity and diversification of effort with which German technical staffs have adapted their productive machinery to the widely different demands of their foreign customers especially appealed to the American visitors. Another very significant thing on which Mr. Calder lays stress is that Germany has had the courage to invite her European competitors, France in particular, to join her in setting their industrial house in order.

Britain, France and Italy have been individually affected according to their circumstances in ways we have already described, but no country we have surveyed has shown the same foresight and dexterity in playing with economic forces as Germany.

By encouraging the fabulous depreciation of the mark her industrial interests succeeded in wiping out their enormous bond and other internal debts, a result that has been of the utmost value in the post-war settlements. This step placed German industries in a favorable position for obtaining additional capital, though this summer her machine shops appeared to be hampered by shortness and dearness of long term loans, and by the heavy increase in taxation which national adjustments have made necessary. The German Government, however, has shown willingness to return considerable amounts of these taxes to the national industries instead of applying them directly to reduction of external state debts.

Foremost among the present day economic forces in Germany is its electrical industry. The Allgemeine Elektrische Gesellschaft—A. E. G.—and the two Siemens companies employed 187,000 persons in 1924-25, and had a value of product exceeding $220,000,000. These companies, well supported by loans from the United States, have liaison men there and working arrangements in manufacture and research with our General Electric and Westinghouse companies respectively. Already the pre-war output of these German concerns has been exceeded and they exemplify the tendency of reorganizations and combinations there to increase the central control of groups of large plants.

Combinations in Coal and Steel

Today the Rhenish-Westphalian Coal Syndicate and the great cartel of the German iron industry are contributing by skilfull organizations to overcome the difficulties created by the peace terms. While the writer was in Berlin in August and again later in Paris strenuous efforts were put forth to make this combination international so far as Europe is concerned. Conferences of German, French, Luxemburg and Belgian interests had to be suspended for a month to allow of adjustments in pooling allotments to Belgium, but the desired concessions were made and a continental steel cartel, from which Britain has held aloof, is now an accomplished thing. While it is essentially an organization for selling and for pro-rating tonnage, it is bound to lead to changes in operations in the direction of economies. The almost silent finely equipped rolling mills at Duisberg, for instance, are not likely to remain idle and ingots will not long continue to be worked up in a score of uneconomical, unsuitable and widely separated little plants of other countries in the cartel.

Summary

Europe has new political and economic maps constructed by intrigue and nature respectively. They have never fitted together and plainly they never will. Yet the economic map in an industrialized world is inexorable. Politics must yield to facts. Germany has been one of the first states to realize this. She has one-half of the assets of the Ruhr-Lorraine coal-iron industries but that avails little when the other vitally necessary half is in France. So she wisely ignores old hates in the face of new facts and so do the French iron masters; though their respective peoples do not yet make this concession. It will take a generation to accomplish that. Germany therefore makes wise overtures to former enemies and her people tolerate them, at least, in a governmental and industrial direction which is seeking the ultimate good of all and is fortunate in the temperament and docility of its masters.

Germany's captains of industry are statesmen as well as technologists. They impress by their knowledge of world conditions, and their scientific and trade federations are directed toward national objectives as no others we found in Europe.

Germany is undoubtedly the greatest potential European producer of manufactures. She has none of Britain's internal labor strife, out of which she is meanwhile profiting greatly. She has no impending quarrel with her own people on financial issues like France, and she has not had to confess her collective incompetence to rule her own house like Italy. In spite of slack trade and dear capital, and sorely hampered by artificial restrictions arising out of war settlements, Germany has had the courage and the confidence to invite her European competitors, regardless of nationality, to join her in putting their mutual industrial house in order. To her men who have to do things "war guilt" is as a tale that is told. It has purely sentimental associations—only useful to the politician. In this work the steel cartel has naturally occupied the foreground but there are many other similar arrangements proceeding privately, some of which have already crossed the channel.

If Germany can exhibit as much restraint in a new prosperity which is due as she has done in her great tribulations, it would seem to us that the latest member of the League of Nations—already overtaxing her physical bounds with population—and also Italy with nearly 700,000 new mouths to feed yearly, might well, through mandated territory or other arrangement, get more room in the sun for their overflow of nationals.

If this in due time can be attained by peaceful process and the hearty good will of over half a hundred nations in council at Geneva, it will be a great triumph for the League and a star of hope for the war-tired peoples, not one of which seriously contemplates resort to physical force.

Construction Record High in September

September construction contracts in the 37 States east of the Mississippi River amounted to $562,371,400, according to the F. W. Dodge Corporation, New York. This was only 6 per cent under the total for the preceding month and the decrease from September of last year was less than 1 per cent. These 37 States include about 91 per cent of the total construction volume of the country. New construction started in the same 37 States during the past nine months has totaled $4,809,779,800 in value, being an 8 per cent increase over the corresponding period in 1925.

A decline in the volume of building construction is indicated, however, by the amount of contemplated new work reported in September. This amounted to $621,285,500, which was 9 per cent more than was reported in August of this year but 9 per cent less than was reported in September of last year.

Program for Refractories Institute Meeting

Prof. Gordon B. Wilkes, Massachusetts Institute of Technology, Cambridge, Mass.; R. F. Geller, Bureau of Standards, Washington; Samuel J. McDowell, superintendent Columbus, Ohio station, Bureau of Standards; L. E. Hankinson, West Penn Power Co., Pittsburgh, and Stuart M. Phelps, director of research and tests of the refractories fellowship, Mellon Institute of Industrial Research, Pittsburgh, will present papers at the fall meeting of the American Refractories Institute at the University Club, Pittsburgh, Thursday, Oct. 21. "Plastic Refractories" is the subject of Mr. Stuart's paper; those of the other speakers have not been announced. The meeting will begin at 10.30 a. m. Miss Dorothy A. Texter, 2202 Oliver Building, Pittsburgh, is secretary of the institute.

Plan Largest Machine Tool Show

Coming Exposition Holds Center of Stage at Machine Tool Builders' Lenox Meeting —New Officers Elected

ENTHUSIASM for the first machine tool exposition, to be held by the National Machine Tool Builders' Association at the Public Hall, Cleveland, Sept. 19-24, 1927, was apparent at every turn during the twenty-fifth annual convention of the association, held at the Hotel Aspinwall, Lenox, Mass., Oct. 4, 5 and 6. The holding of this exposition, it should be mentioned, is coincident with the twenty-fifth anniversary of the association's existence.

Demand for space is increasing. From the 20,000 sq. ft. asked for by members a few months ago, the space requirements of exhibitors have climbed to more than 40,000 sq. ft., and it is expected that before the exposition opens the total floor space available, 67,000 sq. ft., will be entirely subscribed for. With the entire available space occupied, the exhibition would be ranked as the most complete display of machine tools ever held. As the American builders lead in the production of the "master tools of industry," this exposition should also afford an opportunity to see the best in machine tool design. Some further details of the exposition, as well as names of the members of the committee in charge, are given below.

Although discussion of the exposition was outstanding at the Lenox meeting, many other matters of interest to members of the association received consideration, as outlined further in this report. An address on the "Plan for Organization of the Machine-Tool Section of the Museum of Peaceful Arts" by Joseph W. Roe, professor of industrial engineering New York University, proved of interest to the machine tool builders.

James E. Gleason, president and general manager of the Gleason Works, Rochester, N. Y., was elected president to succeed H. M. Lucas, president of the Lucas Machine Tool Co., Cleveland.

The golf tournaments played at the Pittsfield Country Club on the mornings of Oct. 4 and 5 attracted more than 40 contestants and a demonstration of Steinmetz "man-made lightning" at the Pittsfield, Mass., plant of the General Electric Co. was also enjoyed by several members.

Surveys Progress of Exposition Committee's Work

A SURVEY of all that has been done by the association's committee on expositions was outlined in a report presented by J. Wallace Carrel, vice-president and general manager of the Lodge & Shipley Machine Tool Co., Cincinnati, chairman.

This committee had its beginning as a result of discussions at the association's twenty-fourth annual convention, held in Washington, Sept. 30 and Oct. 1 of last year. It was appointed to study the whole exposition question with a view to determining whether it would be better to cooperate as an organization in some other exposition or whether the association would better serve its industry and its customers by staging its own. After some investigation the committee recommended the association should develop its own exposition.

The matter was then put before the association at its meeting at Providence, May 6 and 7, and, as reported in THE IRON AGE of May 13, page 1333, the convention voted to hold the exposition in Cleveland in the fall of 1927. Ten days later option was taken on use of the Cleveland Public Hall for the suitable dates available, Sept. 15 to 27. Following this, members were canvassed by bulletin to find out if the committee could count on the minimum of 20,000 sq. ft., which was estimated as necessary to make a showing worthy of the industry. By June 16, 51 members had guaranteed the necessary minimum space, whereupon the committee met in Cleveland, definitely settled the date, arranged for space and engaged Roberts Everett as manager of the exposition.

Some of the difficulties met in drawing floor plans were touched upon in the report. It is the object to disperse large exhibits through the Hall, and create various centers of interest around which the smaller exhibits may be grouped, and thus give as nearly equal prominence as possible to all members' booths. It is proposed to draw the booths by lot in order to give all members as equal a chance as possible for choice locations. The floor plans drawn up by the exposition manager have had to be modified as more applications came in, not only from members, but also from non-member machine tool builders and from makers of accessories.

The fact that the committee has not directly solicited members or non-members to take space is emphasized in the report. The exposition was launched and put under way by the desire of the association's membership to have an exposition of their own. The spaces applied for by members were said in general to be larger th n they have used in other expositions, where they took, as mere exhibitors, just as little space as they felt that they could get along with.

Space Requirements Reflect Complete Display

"But as to our show," said Mr. Carrel, "I believe there is a different feeling, one of proprietorship and pride and determination to make it the best in which machine tools have ever been shown. Consequently, many of us intend making a very complete display of our products, and therefore the members are generally taking the position that they wish as much space as necessary for such a display, and not as little as they can get along with. And since, with few exceptions, our members will show only at our exposition, even this larger display will be made at less cost than we have had to incur when we were making a smaller showing at several expositions in a given year."

"The committee is mindful that this exposition will mark the twenty-fifth year of our association's life," continues the report. "During these twenty-five years there has been no other big thing in which every machine tool builder, large or small, could cooperate as in this exposition. It marks a big step in something else which is vital to the industry; it puts us far forward in constructive merchandising, a thing in which our industry has been lagging behind others."

A floor plan of the space available at Cleveland Hall

was prepared for the Lenox meeting, and it was intended to draw for display locations. Because of the numerous demands for increased space, received by letter, telegraph and through other means, it was considered desirable to postpone the drawing for space until a new floor layout has been prepared. The committee plans to meet in Cleveland on Oct. 21 and inspect the exhibition building, after which a new arrangement of spaces will be made, and the new layout sent to members.

From all developments, it is clear that the association's members are disposed to make their initial exhibition a marked success, not only for individual exhibitors, but as an achievement of the industry as a whole.

Confidence in the personnel of the committee was expressed by everyone entering the discussion which followed the presentation of the committee's report. The responsibility put upon the committee was commented upon by its chairman, Mr. Carrel, who said that in making a decision on space allotment that might not satisfy a member, the committee expected the backing of every other member as being satisfied that "we have done the best we could."

Machine Tool Industry Must Be Adequately Compensated

A VIVID picture of the past and present activities of the association, as well as of future possibilities, was drawn by President Lucas in his address opening the convention. The necessity of adequate return to permit of maintaining and developing the machine tool industry was also forcefully presented.

The establishment of a permanent office in 1921, with a full-time staff engaged for the service of the industry, was pointed to as enabling the doing of many things much better than before. "Our association," said Mr. Lucas, "is now recognized as the authoritative source of information on every conceivable problem affecting the machine tool industry. Without a permanent staff, there was no such source of information and no authoritative way to correct misunderstandings of our industry's problems, nor the problems of the individual machine tool builders.

"Since 1921 our members have learned that our association can help them by gathering and disseminating information; that it can help them by crystallizing the soundest opinion of the industry in respect to various business policies by pointing out policies that have led to success, and by condemning those that have led to failure. During the past few years we have learned much about some very deceptive and obscure elements in the cost of producing machine tools. We have learned something about the rate of turnover of working capital, and the necessity of controlling inventories according to the fluctuations of our demand. We have learned the value of statistical indexes as guides for the executive in planning his business policies. We have learned the necessity of better merchandising of machine tools."

The adoption of the association's code of ethics and the provision of a committee to enforce it was stressed as one of the outstanding achievements of the last few years. The machine tool industry's coming exposition, characterized as the association's latest activity and one of outstanding importance, was spoken of as marking the beginning of cooperation by American builders in constructive merchandising and in the reduction of competitive marketing waste. Such cooperation, it was pointed out, has long been made a success by the English and German machine tool industries.

Keeping High-Grade Personnel a Problem

That the machine tool industry, which builds the "master tools," does not yet occupy the position or enjoy the prestige to which it is entitled by virtue of its contribution to the general good, was regarded by Mr. Lucas as the industry's most serious problem. The blame for this he laid largely at the door of the builders themselves, and advocated serious consideration of the problem of placing the machine tool industry at least on the same level of respect that is held by those industries that could not exist without machine tools.

"It seems to me," said Mr. Lucas, "that we are held below this proper level because salaries, wages and profits in our industry are not on a par with those of other metal-working industries.

"This industry, on which all others depend for reduction in costs of production, should be able to enlist and retain in its ranks the best of engineers, the best of salesmen, the best of executives, and the best of workmen. To do so it must be able to pay all such men at least as much as other industries will pay them. But since the days of the bicycle we have seen production shops hire away our best workmen, our foremen and our executives at wages or salaries that we could not afford to pay."

From a mortality study of the machine tool industry, it was shown that there is a high and constant yearly death rate among adult, well-established concerns of all ages. Of the concerns that died, many of them began to sicken on the day they lost one man whose individual talent had built them up to relative prosperity. Few successful machine tool companies are over 35 years old, and whose management is therefore in the hands of a competent second generation of management. To enlist, train and keep the sort of personnel that the industry requires was thus shown to be a serious and pressing problem.

"With the possible exception of the automobile manufacturers," said Mr. Lucas, "the machine tool builders have devoted more time than any other group of machine manufacturers to developing and building new and better machines. New methods have been devised by all of us for saving time in the making of all kinds of machinery and metal goods. The pressure for still better methods is so strong that the new machine of yesterday becomes obsolete almost tomorrow by reason of the initiative and activity of some wide-awake builder of machine tools. In contrast, there are other machine-building lines that have developed almost no improvement in ten years or more. Yet these industries can and do secure a higher percentage of return than ours, in which so much brain work, labor and capital are being expended.

Machine Tool Builder Must Collect Return

"The machine tool builders' customers have no merely sentimental interest in him. It is none of their immediate concern if he fails to secure the return necessary to maintain and develop the industry on which their own future depends. It is part of the machine tool builders' own job to collect that return himself. If he is negligent in doing this, no cry for sympathy will prevent his business being ground to pieces by the economic steam roller. Therefore I raise no cry for sympathy, but I do ask you to consider these cold facts."

It was pointed out by Mr. Lucas that for many years the machine tool industry has been noted for relatively low compensation of its whole personnel as well as for relatively low returns on its capital and relatively high risk and business mortality. In this connection he put the questions:

"How many of you today sell your machines at prices that will permit you to pay for the knowledge and skill built into them—salaries and wages that equal the compensation that equal talent will command in other fields? How many of you get a profit that will permit further development and safely assure carrying your business over the dull periods that you cannot hope to avert? How many firms in this industry have earned profits that equal those of other industries that are less risky than ours, industries that necessarily depend on ours for their low costs of production?"

"Builders of other machines, who aim to go on building the same machine in quantities year after

New Officers of Machine Tool Builders' Association

President.—*James E. Gleason, president and general manager of the Gleason Works, Rochester, N. Y.*

First Vice-President.—*P. E. Bliss, vice-president of the Warner & Swasey Co., Cleveland.*

Second Vice-President.—*Wilson P. Hunt, president and general manager of the Moline Tool Co., Moline, Ill.*

Treasurer.—*Edward A. Muller, vice-president and general manager of the King Machine Tool Co., Cincinnati.*

General Manager.—*Ernest F. Du Brul, Cincinnati.*

Members of Board of Directors.—*A. H. Tuechter, president of the Cincinnati Bickford Tool Co., Oakley, Cincinnati; Henry Buker, vice-president of the Brown & Sharpe Mfg. Co., Providence; and C. C. Swift, manager of the Ohio Machine Tool Co., Kenton, Ohio.*

Exposition Committee of Machine Tool Builders' Association

Chairman.—*J. Wallace Carrel, vice-president and general manager of the Lodge & Shipley Machine Tool Co., Cincinnati.*

Members.—*P. E. Bliss, vice-president of the Warner & Swasey Co., Cleveland; H. W. Dunbar, assistant general sales manager of the Norton Co., Worcester; O. B. Iles, president of the International Machine Tool Co., Indianapolis; and E. J. Kearney, secretary and treasurer of the Kearney & Trecker Corporation, Milwaukee.*

year, will know that you who devise new machines make it possible for them to cut their costs and increase their profits," continued Mr. Lucas. "It should not be difficult to convince them that you deserve not only a respectable but a generous return for your effort. You have the best kind of a background for insisting on a proper return for the future benefit of your customers themselves. Today, with mass production of all kinds increasing by leaps and bounds, the machine tool using industries have much greater need for a better organized, more vigorous, more substantial and more progressive machine tool industry.

"The machine tool industry must fail to do its full share in advancing civilization if it does not secure prices that generously reward its work. It has failed to do this in the last five years, as shown by the heavy losses our industry has sustained through business failures in that time. The only cure for this wasting disease is for each of you to stand firm for a price that will permit your business to meet the continually increasing demands your customers are putting upon you for better designs, more and better service, better workmanship, better shops, and all the other things that you must have at their command."

The way to apply this cure, it was pointed out, was not by indiscriminate price boosting, nor by concerted price boosting of any kind. "Each of you must individually study your own business, find out what your true costs are, and determine what price policy is proper for your own business," said Mr. Lucas.

Discusses Continued Prosperity of Industry

"HOW long will present prosperity last?" was one of the interesting questions discussed in the report of E. F. Du Brul, general manager of the association, presented at the opening session.

"Since the last convention (May 6 and 7) indexes of activity of most industries have continued on a satisfactory level, and our own index of orders has conformed to this common experience," said Mr. Du Brul. "In this period many industries have shipped more product than they ever shipped before in the same length of time, and the country has been wonderfully prosperous.

"Early in this year conditions were apparently shaping strongly for a boom, which would, of course, have been followed by a recession. Many business forecasters assumed that most business men would lose their caution this year, as they had in past years under similar conditions. But this year business men heeded the forecasters' storm signals to such an extent as to nullify the forecasts in great measure. So far as the forecasters produced a cautious state of mind in business men, they did a very great service to business. Sane management simply did not allow business to go into an insane boom, as might easily have been the case in times gone by.

"No one need now be classed as a pessimist for believing that a high rate of activity is not likely to be maintained indefinitely. Some change in condition will take place some time, and it is well to be prepared to recognize that change whenever it does come. There is nothing but our own index of orders to show what is really happening in the machine tool industry. Reports of activity in other industries are of little value to the machine tool builder under conditions similar to the present."

The question, "are business fluctuations becoming less violent?" was answered in the affirmative in another section of Mr. Du Brul's report. The violent fluctuations of the past were attributed largely to the lack of reliable information upon which to base sane judgment, business executives being compelled to plan production, sales and finance on sentiment impression, emotion or hunch. In the last five years, studious managers have planned their business courses along the lines that their economic advisers pointed out to be desirable. It seems fair to conclude that this planning must have been an important cause in producing the greater stability that business has had in the last three years, than it ever had before in the same length of time, said Mr. Du Brul.

The large influence of inventory on profits was mentioned, it being pointed out that to keep the rate of turnover at a good high average, the inventory must be reduced as demand falls off. Simplified designs and better control of inventory were said to have improved the rate of turnover in many of the association members' plants, and many members have been helped by it. "Our index furnishes the only information of any reliability as to whether inventory should be increased or reduced," said Mr. Du Brul.

Mortality Rate of Industry Too High

A section of the report was devoted to discussion of a study of the mortality rate in the machine tool industry, the approximate 3 per cent per year death rate for all concerns over six years of age being

stressed as a rate far too high. No attempt was made to diagnose the causes of this heavy mortality, but some of the things that must be present if a machine tool concern is to live, was outlined in the report.

First of all, the company must be up to at least the average level of the industry in salesmanship. After sales effort, quality of product was rated as the important factor, a good salesman with a good product being able to turn in more orders than he could with a poorer product. But no matter how good the quality, or how good the selling ability, the price of the product is a very vital factor to its builder, because that price must be high enough to give him a profit or he simply cannot stay in the business, said Mr. Du Brul. "The builder of good machine tools must be a good merchant if he is to continue in business," he continued. "He must also be a good manufacturer, either if he is to compete with others, or if he is to make a profit out of even a high price that the market may be able to pay him."

Technical Committees Active

A review of the work of the association's committees was also given in the report. The work of the tee-slot standardization committee has been completed and its report will soon be submitted to the American Engineering Standards committee. It will be the first standard listed concerning machine tools and will be followed by others under the sponsorship of the association. The standardization of tool holders and tool post openings, milling cutters, spindle noses and machine tapers are other projects that are being worked on. The association's grinding machine committee is still working on standards for pressed steel wheel guards. The radial drill committee is active in establishing standards of working ranges. Steps have also been taken to standardize designations and nomenclature of various classes of tools.

The standardization of speeds on constant-speed drive machines was decided on as the immediate activity of the association's standards committee, at a meeting of the committee in Chicago, Sept. 21. The proceedings of the latter meeting were outlined in a report presented at the opening session by A. L. Stewart, Gleason Works, Rochester, N. Y., chairman of the committee.

In deciding upon its immediate activities, the suggestions for standardization outlined by James E. Gleason, president of the Gleason Works, at the Providence meeting, May 6 and 7 (reported in THE IRON AGE of May 13, page 1334) were revlewed. The committee was a unit in deciding to take up the standardization of speeds on constant-speed drive machines.

"As Mr. Gleason had pointed out," says the report, "there was a large variety of such speeds in any one shop. The Gleason Works in a survey of only part of their equipment, found a range between 250 and 1100 r.p.m. for constant-speed drives, with speeds at almost every point within this range. The committee felt that this large number of speeds could be reduced to good advantage by formulating a series of standard speeds for such drives."

Other members of the standards committee are W. L. Miller, Gisholt Machine Co., Madison, Wis., and S. A. Einstein, Cincinnati Milling Machine Co., Cincinnati.

Plan Exposition Publicity Program

Plans for an intensive publicity program for the association's Cleveland exposition were outlined in a brief report of the advertising committee, which is headed by F. B. Heitkamp, Cincinnati Milling Machine Co., Cincinnati. The program includes trade and technical paper publicity and dealer assistance, as well as other means.

Brief reports were also made by the dealer relations committee, of which J. C. Carlton, president and general manager of the Carlton Machine Tool Co., Cincinnati, is chairman, and by the standard sales practice committee, which is headed by A. J. Gifford, Leland-Gifford Co., Worcester.

Wage Statistics to Be Gathered

The gathering of wage statistics in a form that will be useful to the industry was voted at a session devoted to general discussion of a variety of topics. This information will be gathered and sent out by the secretary at six-month intervals. It will be a composite report and compiled on a regional basis.

The topic: "Is the machine tool industry preparing engineering talent and management to perpetuate itself?" elicited active discussion. It was voted to appoint a committee to devise ways and means of interesting technical graduates in the industry. This will be done by conferring with deans of colleges and schools and seeking their suggestions as to ways and means, and also by arranging for members of the association to address seniors and graduates.

A standard classification of indexes for registers, advertising lists., etc., already begun by the War Department through its National defense division, was also taken up. It was pointed out that the association is the proper body to compile such standard indexing classifications as they relate to machine tools. Such standard terminology would prevent misunderstandings between builders and their customers in making bids.

Favor Machine Tool Section of Peaceful Arts Museum

INTEREST was shown in an address on "Plan for the Organization of the Machine Tool Section of the Museum of the Peaceful Arts," by Joseph W. Roe, professor of industrial engineering, New York University, delivered at the second session, Oct. 5. It was voted to cooperate in this project.

Professor Roe prefaced his explanation of the plan by outlining the contribution of the machine tool industry to the wealth and prosperity of the country. This prosperity, it was pointed out, is due not only to wealth of resources but to an unequaled rate of production per man. The report of the Trade Union Mission sent by the London *Daily Mail* to study the working conditions and the use of machinery in American industry was referred to. The members of this mission unite in attributing our prosperity to good feeling and cooperation between management and workmen, and to the use of power and improved tools. The last is emphasized repeatedly in the individual reports of the commission, and it is repeatedly brought out that not only is there 3½ hp. available for every American workman, but that this power is at his elbow. Machine tool builders, said Professor Roe, are the ones who put that power at his elbow. All the materials we have and use are either made by machine tools or by equipment which was itself made by machine tools. The machine tool is either the father or grandfather of everything we use.

Machine Tool Section to Be First Unit

"The position of the tool building industry has had remarkable confirmation in the will of the late Henry R. Towne of the Yale & Towne Mfg. Co.," said Professor Roe. "He left a bequest of several million dollars for a museum of industrial arts which should set forth adequately the position and contributions of America to the peaceful arts. His plan is so broad that it will require years of growth for full development. Realizing this, he suggested that it be developed section by section, and furthermore, that the most fitting industry for the first unit would be that of 'machine tools, an industry,' to quote the words of his will, 'in which this country is the acknowledged leader, for these constitute a chief part of the equipment of many industries and are the means whereby all the equipment of all other industries is produced.'

"In accordance with this wise direction, the trustees, who are organizing the museum, have asked me to outline a section covering this field. Such a section should be more than an aimless collection of historical machines brought together without method or system. It should present a symmetrical picture of American

Machine Tool and Shop Practice Section, Museum of the Peaceful Arts

Table I—Breakdown of Divisions Into Classes

DIVISION I
Elements of Machines and Machine Shop Practice
(See Table II for breakdown of each class)

Class
1. Hand Tools — Primitive implements, machinist's tools, carpenter's tools
2. Cutters—Steels used, single edged lathe-planer types; milling cutters, drills, reamers, forming tools, wood-working tools, etc.
3. Grinding—Flat and Rotary, soft stone, hard, disk, buffing, polishing, etc.
4. Slide Rests—Evolution and modifications, Turret principle
5. Chucks, Clamping Devices—General principles of jigs and fixtures

DIVISION II
Machine Tools and Standard Production Machinery
(See Table III for breakdown of each class)

Class
1. Lathes
2. Boring Mills, Boring Machines and Broaching Machines
3. Planers, Shapers, Slotters, Rifling Machines
4. Milling Machinery
5. Drilling Machinery
6. Broaching Machines
7. Grinding Machinery
8. Gear Cutting Machinery Formed-tooth, template, generating, hobbing, etc., for spur, bevel and worm gearing

DIVISION III
Old Shops

1776—Hand Tools Era—Showing whip lathes, post drill, forge, small cupola, etc., and workmen making house hardware, agricultural tools, kitchenware

1800—Beginnings of Specialization Showing templates, filing jigs, head-stock lathe, candles

1820—Milling Machine, drills, gages, Blanchard lathe, back geared lathe, candles or whale-oil lamps

1840—Planer, shaper, jigs, lead-screw lathes, kerosene lamps

tool building and make a strong appeal to the average person, quicken interest and unconsciously educate. The exhibits must, therefore, be deliberately and carefully chosen and shown in a way to bring out their relative importance and historical sequence. To do this there should be a consistent and carefully drawn plan, as complete as possible, outlining the things which should be represented and in their related groups."

A tentative plan for the section has been drawn up and was shown by Professor Roe in the form of three tables, part of the first one of which is reproduced herewith.

Constructive criticism of the plan was asked for. It was stressed that the plan is subject to improvement as increasing experience may suggest. A second thing to be considered is that a full outline cannot be realized for many years. It will be filled in as growth permits, but with its help the accessions will be made in such a way as ultimately to fit into a symmetrical and adequate picture of the art. It was further emphasized that the plan "should, and we hope that it can be, developed with the cooperation of the tool building industry. The help of many men, each thoroughly familiar with parts of the field, will produce a far better result than the product of one or even a few."

Present State of Art to Be Also Shown

"Another consideration, and a practical one," continued Professor Roe, "is this: An adequate collection should bring out two things, first, the evolution of tools and the tool building art; second, the present state of that art. The materials to set forth the present state of the art are in existence and available. An adequate collection showing the state of the art could be brought together in a relatively short time. On the other hand, the material setting forth the evolution and development of the art must be located and obtained or reproduced. For much of it replicas must be made, as many originals of important steps in the development have long since disappeared. This process will take a long time and must be done gradually. It would seem wise therefore to undertake showing the present state of the art first, and let the historical develop concurrently but more deliberately.

"By the present state of the art I do not mean the latest, up-to-the-minute developments represented in such exhibits as the New Haven Machine Tool Exhibit and your forthcoming one at Cleveland, but that accepted good practice found in the leading and progressive establishments at any given time. This shows a slow but steady improvement which would be followed by gradual rather than wholesale replacement of exhibits, by the latest photographs, etc., and should not involve great expense.

"There is a marked community of interest between the object of this section of the museum and this association, and it is distinctly to the advantage of the tool building industry that the public should realize how great factors this industry and its output have been and now are in America's contribution to civilization."

In the discussion following his address Professor Roe said there would be no duplication of effort in respect to the Rosenwald industrial museum to be built in the reconstructed Fine Arts Building in Jackson Park, Chicago. There is a place for educational museums in the two centers of greatest population. Two such exhibits would be better than one because a great many more people will thus be reached.

The value of such a museum was recognized by several members discussing the project, and by some it was tied up with apprenticeship, in that it would quicken the interest of young men in the machine tool and allied industries. It was voted to empower the president to appoint a committee to cooperate with Professor Roe. It was explained by Professor Roe such cooperation would be in the line of counsel and help in deciding on what specific exhibits to show, and establishment of contact with the persons who could give the best advice as to developing the various divisions of the museum.

The growth of the Belmont Iron Works, steel fabricator, Philadelphia, is the subject of an article in the September issue of "The Girard Letter," published by the Girard Trust Co., Philadelphia. Among the large structures in the Philadelphia district which the Belmont Iron Works has erected are the Sun Shipbuilding Co. plant, Chester, Pa.; the plant of the Camden Forge Co., Camden, N. J.; the Shibe baseball park grandstands in Philadelphia, and a part of the Baldwin Locomotive Works plant at Eddystone, Pa. Harry B. Hirsh is president of Belmont Iron Works, A. F. Rader is vice-president and general manager, Edward Browning is secretary, and W. C. Smith is treasurer.

Share earnings of the Acme Steel Co., Chicago, for 1926 will exceed by a fair margin the $8.26 a share earned in 1925 as indicated in an official report concerning the current business of the company. Dividend rate on the new common stock was increased on July 1 of this year from $2 a year to $2.50 with a payment of a regular quarterly of 62½ cents. Interest charges on the company's $1,440,000 in 20-year first mortgage bonds were earned 15.91 times in 1925, as compared with 10.97 times in the previous year.

Final figures relating to the Portland cement industry in 1925, compiled by the Bureau of Mines, Department of Commerce, show that the production of Portland cement in 1925—161,658,901 bbls.—was the largest quantity manufactured thus far in any year, exceeding that in 1924, the next highest year in production, by 8 per cent.

The 600-ft. lake freighter, the William McLauchlan, that is being built for the Interlake Steamship Co., Cleveland, that is controlled by Pickands, Mather & Co., was launched at the Lorain yards of the American Shipbuilding Co., Oct. 2. This boat was named in honor of a former partner of Pickands, Mather & Co. who retired a few years ago.

British Wages Much Below U. S.

Reports Prepared by Bureau of Labor Statistics Show That American Rates Are Frequently Three Times Those of Plants in Great Britain

WASHINGTON, Oct. 12.—Presenting a great amount of data that never before have been assembled, the Bureau of Labor Statistics, Department of Labor, has just completed a compilation of considerable detail showing wages paid in the British iron and steel industry in the spring of 1926, and, by a coincidence, figures showing 1926 wages in the American iron and steel industry have recently been prepared, some of them published and the remainder soon to be published. Through this circumstance, a comparison of wages paid in the two countries is possible, and shows that the American wage greatly exceeds the British wage, running in some cases to practically three times as much, both being based on the hourly rate for an 8-hr. shift.

The data for the American industry were gathered as a regular part of the work of the bureau. The material concerning the British industry was gathered by J. C. Bowen, chief statistician, who was sent to Europe early in the year to make an inquiry into wages paid, working agreements, policies, etc., existing in the iron and steel and pottery industries of Great Britain and Germany. Mr. Bowen has just completed preparation of the study as to wages in the iron and steel industry of Great Britain.

He pointed out that foreign government statistical offices have scant figures, and more often none at all, a condition that was true before the World War and even more true at this time. There are plenty of figures available as to production, he stated, but not as to wages, especially wages of piecework occupations. While he spoke of the figures collected concerning iron and steel wages in Great Britain as being fragmentary, they are much more detailed than any before compiled. He obtained the data from employers and union officials, there being little opportunity to compile data direct from pay rolls with the painstaking accuracy employed by the bureau in collecting wage data in the United States.

Sliding Scale in Effect in Great Britain

In Great Britain, it is explained, iron and steel employers and their employees are each organized. Between the two organizations there has been developed a system of adjustments applying to wages and hours and other working conditions. A prominent feature in wage matters, it is stated, is the sliding scale whereby wages go up or down with the selling price of the product. This sliding scale is credited with doing much to stabilize wage agreements. Mr. Bowen also pointed out that wages differ as between districts and as between plants in the same district, although there are some rates, like those for puddling, that seem to be fairly uniform. Wage adjustments are continually in progress, and a change of rate may follow any change of equipment, process, or product, apart from the automatic change of the sliding scale. To meet conditions, wage boards have been established by mutual agreement for the handling of disputed questions. Three documents have been prepared by Mr. Bowen to illustrate the methods adopted for the adjustment of wages and working conditions.

The material regarding wages and hours of labor in the American iron and steel industry, which have recently been prepared, relate to blast furnaces, open-hearth furnaces, and bar mills, and have been published, while those about to be published concern the remaining seven departments, including Bessemer converters, blooming mills, puddling mills, rail mills, plate mills, sheet mills, and tin-plate mills. The British figures deal with blast furnaces, open-hearth furnaces, puddling mills, tin-bar mills and tin-plate mills. The American figures compare wages paid in 1926 and 1924.

A Comparison of Wage Rates

Comparing briefly some of the wages paid for an 8-hr. shift, figures are shown for common labor in Great Britain and the United States:

Common Labor Wages per 8-hour Shift

	British wage	American wage	Per cent increase
Blast furnaces	$1.44	$3.12	116
Open-hearth furnaces .	1.64	3.53	115
Puddling mills	1.60	2.84	77
Bar mills	1.79	3.40	90

While wages for skilled workers in both countries are naturally much higher than for common labor, the ratio difference is about the same as that pertaining to the latter class of workers.

The highest wage shown at the three blast furnaces visited in England was $27.83 for a full-time week, the stack being hand charged. The highest paid at the mechanically charged furnace visited was $26.38. In both instances the keepers received the maximum. Indicative of other weekly wages paid at blast furnaces in England were: Slaggers, $18.49 to $20.64; blowing engineers, $19.44; pumpmen, $14.72; stovemen, first, $19.44; coke filler, $16.38 to $23.05; hoistman, $23.21; coke crane driver, $17.73; turbo driver, $16.56.

Wages shown for 8-hr. shifts at an open-hearth furnace range from $71.35 for a full-time week, with five and two-thirds shifts per week, to $12.01 for the ingot weighman. For the rolling mill, with five and one-third shifts per week, the wages range from $33.01 to $10.45 for the third-hand roll changer. In the open-hearth furnaces in Manchester, stockers are paid $12.17 per week of 46⅔ hr., and as they work regular shift time, they average $2.09 per shift of 8 hr. Stock cranemen earn $1.70 per shift, plus an average output bonus of 61c., plus the present sliding scale of 26¼ per cent, a total of $2.92 per shift. The rate for melting is 47c. per ton, plus 26¼ per cent, or 59c. for cold metal basis. The hot metal basis is 44c. per ton, plus 26¼ per cent of 55c. About 85 per cent of the work is done at the latter rate. The rate is divided among the workers, the first hand melter receiving 47 per cent, the second hand 30 per cent, and the third hand 23 per cent. A typical furnace produces 700 to 800 tons, or an average of 750 tons per week, the equivalent of 42.86 tons per shift. At this rate of output the melting hands average $23.46 per shift, of which the first melter receives $11.03, the second melter $7.04, and the third melter $5.39.

Great Britain Increases Output Per Man

Mr. Bowen gives the following heavy steel production in Great Britain:

1920—154,108 men, producing 6,831,000 tons, or an average of 44.3 tons per man.

1922—82,839 men, producing 4,645,000 tons, or an average of 56 tons per man.

1923—101,000 men, producing 6,163,000 tons, or an average of 60.9 tons per man.

The increase in per capita production, it was stated, is due, in part, to improved or new plant, but more to the increased efficiency of the men, since the change to the 8-hr. day.

"Through this increased production the men who lost 20 to 25 per cent of their earnings under the adjustment scheme when the 8-hr. day was introduced have been able to earn as much under the 8-hr. shift as under the 12-hr. shift," said Mr. Bowen. "Further, men who were accustomed to certain wages when the

percentage scale was high are desirous of having as much income under the lower scale as they had under the higher, and this has been an incentive to increased production."

Melting rates and the weekly hours, it was stated, are the same in Birmingham as in Manchester.

In his study of wages in puddling mills in the Midland district, including Manchester and Birmingham, Mr. Bowen said that work is done on the 8-hr., three-shift basis when there is sufficient work, and in each shift a puddler usually handles four heats of pig iron and in addition one round of scrap iron. In Birmingham each heat of pig iron weighs about 500 lb., and the scrap from 300 to 500 lb., while in Manchester the weights average 550 to 300 lb. The heat of scrap is generally paid for at the pig iron rate rather than at the rate for scrap iron, the latter being paid only for regular shifts on scrap iron work. In an 8-hr. shift, therefore, the Birmingham puddler produces from 2300 lb. to 2500 lb., and the Manchester puddler 2500 lb. Earnings are divided between the puddler and his helper in the proportion of five-eighths and three-eighths, but if the work is done "level-handed" (by two puddlers), the earnings are divided equally. About half of the puddling in both cities is done "level-handed." In nearly all processes a standard basic rate per ton is paid, and this rate is increased or decreased 2.5 per cent for each change of $1.22 in the selling price of bar iron.

Union officials told Mr. Bowen that all men on tonnage rates in puddling and in rolling now earn as much in 8 hr. as they formerly did in 12 hr., due to increased speed in production. In Birmingham the full level-handed rate per gross ton, including the sliding scale of 50 per cent, totals $4.93, of which $3.08 goes to the puddler and $1.85 to his helper in puddling pig iron. The earnings per shift range from $3.54 to $3.85 for the puddler and $2.12 to $2.31 for his helper. In puddling scrap the full rates per gross ton range from $3.85 to $4.38.

Rates in Welsh Tin Plate Mills

Wage rates in tin bar manufacture at Swansea, Wales, for stockers range from $1.90 to $2.04 per 8-hr. shift to as high as $7.06 for rollers. The scale in tin plate mills moves from 1¼ per cent for each 61c. change in the price of steel bar as determined by accountants hired jointly by the employers and the unit to audit the company's books. When the data were gathered employers were continuing to pay a 7.5 per cent sliding scale, although the price of steel bar was so low as to make no addition to the basic rate. The base rates are figured on the box as a unit, a fixed rate being paid per box, or per dozen, or per 100 boxes. The base box of black plate is the equivalent of 225 sheets 10-in. x 14-in., having a total area of 31,500 sq. in. Earnings per shift range from $1.79 for common laborers to $5.58 for male rollers. The total basic rate for bar cutting is given as $1.65 per 100 boxes.

Weekly Earnings in British Steel Plants

The Iron and Steel Confederation of England furnished Mr. Bowen the accompanying statement as to the range of weekly earnings in steel plants in Great Britain:

Weekly Earnings in Steel Plants in Great Britain

Melting:	
First hands	$36.86 to $52.22
Second hands	24.58 to 33.79
Third hands	21.50 to 26.11
Helpers	13.90 to 15.36
Pourers	21.50 to 24.58
Pitmen	21.50 to 30.72
Charge wheelers	10.75 to 13.82
Gasmen	10.75 to 12.29
Ladlemen	9.22 to 18.43
Cranemen	9.22 to 24.58
Laborers	9.29
Rolling:	
Rollers	27.65 to 61.44
Roughers	18.43 to 30.72
Finishers	13.82 to 19.97
Heaters	16.90 to 27.65
Loaders	12.29 to 18.43
Cranemen	12.29 to 16.90
Engineers	10.82 to 15.36
Firemen	9.22 to 13.82
Miscellaneous	8.60 to 12.29

Wages Rates in American Mills Show Some Increases

In its survey of wages and hours at Bessemer converters, blooming mills, puddling mills, rail mills, plate mills, sheet mills and tin plate mills in 1926 in the United States, the bureau report shows that when this year is compared with 1924, the average hourly earnings for all employees in six of the entire ten departments increased, the averages in three departments decreased and the average in the blast furnace remained practically unchanged. The increases range from 6c. per hour on the average in bar mills to 4.4c. in plate mills. The decreases, it is stated, were larger in each case than any of the increases, being 9.1c. per hr. in tin plate mills, 6.4c. in puddling mills and 5c. per hr. in sheet mills.

The report says that the full-time hours per week of employees in the various departments have, on the whole, varied but little during the period 1924 to 1926, although the working time of a few occupations has been materially changed. The full-time weekly hours of picklers in the sheet mill department, for instance, averaged 63.6 in 1924 as compared with 56.9 in 1926. Also, the hours of feeders and laborers in the same department were reduced approximately 8 hr. per week on the average. The reductions in working time in these particular occupations, the report declares, were caused by the change in a few plants from the 12-hr. to the 8-hr. day. While the other selected occupations in these plants have been on an 8-hr. basis for many

How British and American Steel Wage Rates Compare

	British wage common labor	American wage common labor
Blast furnaces	$1.44	$3.12
Open-hearth furnaces	1.64	2.53
Puddling mills	1.60	2.84
Bar mills	1.79	3.40

NOTE—Rates for skilled workers are much higher in both countries, but the ratio difference is about the same.

Highest wage rate at British blast furnaces (three were visited) was $27.83 for a full-time week at hand charged furnace and $26.38 at a mechanically charged furnace.

Highest wage for 8-hr. shift at open-hearth furnace in Great Britain was found to be $71.35 for full-time week and the lowest $12.01.

Heavy steel production in Great Britain has been increased from 44.3 tons per man in 1920 to 60.9 tons per man in 1923.

American steel mill workers have in some instances increased their *hourly* earnings in 1926, but there have been a few decreases.

years, it is pointed out, picklers, feeders, and laborers still continued to work the 12-hr. day.

Earnings Per Hour Both Increase and Decrease

Hourly earnings have considerably increased in most of the occupations in the Bessemer bloom, plate, and rail mill departments, but show considerable decreases in the puddling, sheet, and tin plate mill departments, according to the report. In only three departments, however, have the changes in hourly earnings been due primarily to a change in basic rates. Basic rates remained almost stationary from 1924 to 1926 in the four departments showing increases, the increased earnings being largely due to increased production, and in one or two instances to addition of a time-saving bonus. The decreases in the puddling, sheet, and tin plate mill departments were caused almost entirely by changes in tonnage rates.

The average earnings per hour for all employees and common laborers at the plants which reported follow:

Wage Rates in American Mills

Department	Year	Average earnings per hour: All employees	Average earnings per hour: Common labor
Blast furnaces	1924	$0.520	$0.401
	1926	.517	.390
Bessemer converters	1924	.624	.448
	1926	.641	.443
Open-hearth furnaces	1924	.635	.434
	1926	.677	.429
Puddling mills	1924	.721	.355
	1926	.657	.357
Blooming mills	1924	.613	.462
	1926	.627	.451
Plate mills	1924	.562	.432
	1926	.606	.425
Standard rail mills	1924	.573	.385
	1926	.595	.421
Bars mills	1924	.585	.392
	1926	.591	.411
Sheet mills	1924	.809	.420
	1926	.759	.475
Tin plate mills	1924	.795	.439
	1926	.704	.426

Detroit's Progress Due to Open Shop

President of Employers' Association Tells National Association of Manufacturers That 97 Per Cent of City Workers Are Free from Union Domination

WITHIN the same week that the American Federation of Labor announced its intention of attempting the organization of unions among the automobile workers of Detroit, the president of the Detroit Employers' Association, John Lester Dryden, told the National Association of Manufacturers, in convention in New York, that Detroit's outstanding position in the world of industry is due largely to the open shop.

Mr. Dryden emphasized the fact that of Detroit's 700,000 workers only 20,000 are under the closed shop.

"At the present time," said Mr. Dryden, "we have a population of nearly a million and a half, of which approximately 700,000 are employed and of those only 20,000 are under the closed shop. Do not misunderstand me. This 20,000 does not represent the total strength of organized labor in Detroit, but it does approximate the number that are working in strictly closed shops. In other words, 97 per cent of Detroit's working people are pursuing their various callings without the hindrance of organized labor domination. Nowhere are wages higher or shop conditions better. Nowhere is there less interruption to employment. Nowhere is there generally a more satisfactory understanding between employer and employee.

A Rational Theory of Industrial Relations in Force

"Detroit owes this remarkable industrial relationship, its present prosperity, high wages and steady employment to the fact that it is an open shop city.

"Detroit's prosperity is due entirely to the application of a rational theory of industrial relations, and its beginning was coincidental with the organization of the Employers' Association, Dec. 13, 1902. The history of our association reveals a most interesting story of early disputes and struggles, of sincere and constructive open shop effort, of discouragement and finally of satisfaction in the establishment of a principle that has helped mightily in the building of industrial Detroit.

At the time our organization was established there were many and serious disputes. Unionism had obtained a strong hold on our employment relations. Several organizations opposed to union domination were in existence, but were more of a luncheon appointment in character than having the inclination and organized strength to cope with the situation.

"Members of the Metal Trades and Founders' Association and the Brass Manufacturers' Association then in existence came to the realization that a crisis had been reached in their relationship with organized labor. They analyzed the situation carefully and tried every expedient to adjust differences and finally men of the type of E. T. Gilbert, the association's first president, who died too soon to know the result of his efforts, Mr. Leland, Mr. Trix, affectionately known to us as Uncle Henry and Uncle John, Mr. Inglis, Mr. Russel and others with courage and sincere desire for fair dealings decided upon a concerted effort to lay for Detroit an open shop foundation to establish that principle of human liberty—the moral right to buy and sell personal service. And so our association was formed.

Employees Are Treated Fairly.

"Fair treatment of employees, no discrimination against any man because of his affiliations, the right for either employee or employer to terminate relations whenever either saw fit, not to countenance a condition which would not permit a man to earn a wage proportionate to his productive power, the right to freely employ or be employed; such were the underlying motives of these men. Placing the association on such a platform, members were solicited and 41 enrollments were secured, dedicating themselves under the code of principles to the cause of open shop.

"Ensuing years saw fewer disputes and strikes; it could not have been otherwise. The open shop movement was gaining support rapidly. The influence of the movement spread beyond the confines of our membership and employers generally were studying the economics of the new conditions and using the doctrine as a basis of employment relations.

"As early as 1903 a free labor bureau was established, originally organized to replace strikers, and has been the salvation of hundreds of thousands seeking jobs. This bureau has placed nearly 700,000 men in jobs that were sold them on the principles of open shop. It has proved to be one of the chief factors in solving our labor problems.

Unionists Recognize Fair Attitude of Employers Here

"Union officials viciously declared that it was the aim of the open shop cause to crush labor, reduce wages and force workmen into slavery, but the workers soon realized that the employers' doors were open to any man with a grievance and that the presence of the business agent was not required to get him a fair deal. So clearly has this situation come to be recognized that when recently the eight English unionists visited Detroit they observed that there was little evidence of labor organization. Mr. Mosses, in an interview with Harry M. Nimmo, editor of the *Detroit Saturday Night*, expressed his surprise that, as he stated it, the higher branches of the engineering trade were recruited from the ranks of the workers; and that facilities were provided through which the workman might be trained for executive and technical positions; he concluded that there was not the same need for labor organization in this community that there is in England because of the fair attitude of employers.

"Employers subscribing to the support of open shop have taken an obligation for real community service. They must be true to this obligation and it is the duty of our association to see that they are. That they have with hardly an exception accepted their responsibilities is reflected in the general prosperity of Detroit's industries. I believe that the workingmen of Detroit are willing to accept the fact that their own limitations set the bounds as to how far each one's development may go."

America's Prosperity Its Greatest Danger

John E. Edgerton, president of the National Association of Manufacturers, told the New York convention that the association's immediate objective is "to retain and add to our present prosperity and the happiness of all our people."

"America's outstanding peril," he said, "is that which thrives and glistens upon the mountain top of our material achievement. From the remotest corners of the earth it is seen and envied. And envy breeds hate, hate breeds conflict, and conflict, with its preparations, always costs money and sometimes blood. Our internal perils are even greater. For prosperity and its concomitants, ease and leisure, are the natural breeders of vanity, conceit, lasciviousness and crime, while they tend to destroy the nobler and more eternal values which constitute the foundations of a Christian civilization.

"When America ceases to be the leading nation of the world in its attachment to Christian ideals and practices, it requires no prophet to foretell its decline to a subordinate status in the realm of economic and material life. That should be the greatest concern to every American who has not lost his sense of responsibility in the fog of materialism which characterizes the present age. While we contemplate with pride the fabulous philanthropies with which our rich are expressing to mankind our better nature, we have a ten billion dollar annual crime bill and other concrete evidences of moral putrefaction to engage our moral and mental faculties.

"We can and should, both individually and collectively, stand always squarely for those moralities of mind and soul which constitute the bases of our free institutions."

Greater Tax Relief Needed

James A. Emery general counsel to the association, pointed out in his address that tax relief is not yet an accomplished fact; that we save at Washington and waste at the State capitals; that government is taking not only one-seventh or one-eighth of the national income, but is absorbing half of our national surplus. He advocated the repeal of the additional 1 per cent tax burden on corporations and the reorganization of Federal departments, boards and commissions for economy.

Control of Sand for Foundries

Latest Problems Discussed by American Foundrymen at Recent Convention —New Methods of Testing

THE important subject of foundry sand control received considerable attention at the recent convention of the American Foundrymen's Association, two sessions being devoted to it. Some of the features are reviewed in the following:

At one session, under the able chairmanship of R. F. Harrington, Hunt-Spiller Mfg. Corporation, Boston, reports of the subcommittees of the joint committee on molding sand research, and three papers on practical shop control of molding sand conditions were listened to.

Prof. H. Ries of Cornell University presented the report of the subcommittee on tests, emphasizing the fact that the committee in all its work has kept in mind the necessity of adopting only methods of a practical character, and calling for apparatus as simple and durable as possible. The scope of the committee's work does not include the specifying of certain tests for certain classes of work, but is confined to ascertaining and recommending the best tests for the various properties of sand that need to be determined.

Reports of Committees

The fineness test has been improved so that it can be carried out in 5 min. instead of 1 hr., as heretofore practised. Precautions to be observed in making the permeability test were outlined and slight changes described in the procedure for carrying out the standard A. F. A. cohesiveness test. Methods for making tests for compressive and tensile strength of sand were included in the report, and it was pointed out that each experimenter must determine for himself the most suitable type of strength test for his work. A new test for tensile strength of core sands was described, and the work of the committee in seeking a practical test for refractoriness summarized.

Finally, the increasing use of sand control methods in foundries was shown with a summary of the replies to a questionnaire sent out to 114 companies and individuals, known to be carrying out sand control work. There are now in use 170 permeability testers, 50 compression machines and 50 impact machines for the bar strength test. In appendices the work of the committee during the past year is described in detail.

Walter M. Saunders, chairman, presented the report of the general committee on molding sand research, which now numbers 65, outlining briefly the work of the various subcommittees. Of particular interest was the statement that, in its survey of the molding sand resources of the country, the committee has already collected and tested over 1100 samples of molding sands.

The study of clay substance in sands, Mr. Saunders stated, is of great interest and importance, and can only be undertaken by trained men in well-equipped laboratories. He suggested that a group of foundries should establish a fellowship at some university for the study of this important subject.

R. F. Harrington reported as chairman of the subcommittee on conservation and reclamation, which is working on molding sand substitutes, and on the reclamation of spent steel foundry sands; 35 different clays have been studied and tested, and considerable progress has been made on the subject of sand reclamation.

A. A. Grubb, Ohio Brass Co., Mansfield, Ohio, presented the report of the subcommittee on grading, which included a proposed method for grading sands with respect to grain fineness. The subcommittee has studied 727 sets of test data from all parts of the country, and feels that the proposed methods will be of real practical benefit.

Mr. Harrington presented in outline a paper by himself, and A. S. Wright and M. A. Hosmer of his company, on the use of clay found in molding sand heaps. This paper bears directly upon the study of molding sand substitutes, on which Mr. Harrington's subcommittee reported earlier in the session. The paper gave detailed results of experiments in substituting clay for new sand, and emphasized the need of thorough mixing and of close supervision of the sand by means of tests. After a period of some months, it was found necessary to add a certain amount of new sand to the heaps at regular intervals, in addition to the clay. The savings found possible were considerable.

A. A. Grubb asked if any tests revealed the property of the sand that led to scabbed castings and required the addition of new sands. Mr. Harrington replied that the tests were excellent, but nevertheless no remedy, except the addition of new sand, could be

found. H. W. Dietert expressed the opinion that scabs are generally due to excessive strength and moisture in the sand.

Strength of Foundry Sands

T. C. Adams, fellow in engineering research, Cornell University, was introduced to the members and vigorously applauded. His paper on "Strength Tests of Foundry Sands," presented by title only, discussed the nature of foundry sands, the relation of their constituents to their strengths, the use of strength tests, the strength requirements of sands, the selection and preparation of samples for testing the methods of test in use, interpreting the results of tests in terms of foundry practice, and the testing apparatus used. The paper is a veritable encyclopedia of the whole subject of sand strength tests.

Sand Control in the Foundry

H. W. Dietert summarized a paper by himself and H. W. Wakefield, Jr., of the U. S. Radiator Corporation, on "Sand Control in the Foundry." Means were described for regulating the moisture content of sand heaps with a water meter; the best permeability for different classes of work were given, and particular emphasis was laid upon the importance of determining the dry strength of given sand mixtures. Commenting upon a chart showing the ratio between dry strength of the sand and casting losses, Mr. Dietert stated that the dry strength is the only property he has ever plotted against losses that gave a uniform curve. The use of pitch as a substitute for part of the sea coal was described, and the importance and value of regular testing well brought out. In an appendix, several new types of apparatus and modifications in testing methods devised by Mr. Dietert are described.

Discussion

Mr. Moore, American Cast Iron Pipe Co., Birmingham, discussing Mr. Dietert's paper, gave a most interesting account of methods of sand mixing and testing used in the manufacture of pipe, cast in green sand molds by the centrifugal method. Answering some questions, Mr. Dietert gave further data on the use of pitch and the methods of mixing the sand, and stated that he uses the dye absorption test only for new sands.

This led to a question as to what properties the dye absorption test reveals, and Mr. Saunders stated that it measures the fineness, the colloidal content and the amount of clay substance in sand. Mr. Harrington mentioned the necessity of guarding against variations in permeability due to differences in fineness of successive shipments of sea coal

Major R. A. Bull, research director, Electric Steel Founders' Group, presided at the other foundry sand control session.

Metallurgical Control of Sand

"Metallurgical Control of Foundry Sands" was the subject of a paper presented by L. B. Thomas, Fairbanks Morse Co., Three Rivers, Mich. The paper discussed the composition of molding sands and the important characteristics that determine its suitability for foundry work, namely, bond, permeability, fineness, durability and refractoriness. Methods of determining the first three of these characteristics were outlined, with data on a number of tests of different sands. A method used for shop testing the durability and refractoriness was presented, and the author summed up his experiences by stating that sand control methods have already resulted in savings in his shop, and are counted on for further economies in the near future.

Effect of Milling Sands

A. V. Leun, Cornell University, presented in outline, with slides, an excellent paper on the "Effect of Milling on the Physical Properties of Foundry Sands." A number of tables and charts were shown. As a result of his experiments, Mr. Leun concludes that milling generally increases the permeability and always increases the strength. Precautions to be taken with regard to the moisture content, especially of fine sands during milling, were given, and finally microphotographs of the sand after various milling periods, were included to explain more of the effects found in the tests.

Discussion

Major Anton, Chairman Bull and Mr. Harrington discussed the practical aspects of the question treated in Mr. Leun's paper, and pointed out the desirability of further tests on sands milled for somewhat shorter periods, and the difficulty in practical work of carrying out Mr. Leun's recommendations with regard to the water content during milling. Major Bull emphasized the importance of keeping mixing equipment in first-class shape, so that the same amount of work will always be done in a given time of milling. Gottfried Olsen, of the Illinois Malleable Co., pointed out that, with a given weight of rollers and a given amount of sand, a definite time of milling can be depended upon to give the results desired, and that each foundryman must determine for himself the time of milling that gives the best sand and then keep his conditions to the standard chosen.

Grading Molding Sands

C. A. Hansen, General Electric Co., Schenectady, N. Y., summarized his paper on the grading of molding sands, which is a report of tests made in the work of the subcommittee on grading. By means of tables and charts, the different screening systems are compared, and a highly technical exposition of the methods of determining average grain size is given.

Discussion

M. D. Pugh explained the reasons for the variations between the Tyler screen system and that of the U. S. Bureau of Standards, and asked if sand control is not leading toward the increased use of synthetic sands. A. M. Clark of the Columbia Steel Corporation stated that his company is buying steel molding sand from Belgium, which can be delivered at Pacific Coast points at a lower price than that of local sands hauled by railroad and delivered at the foundry.

Refractoriness of Sands

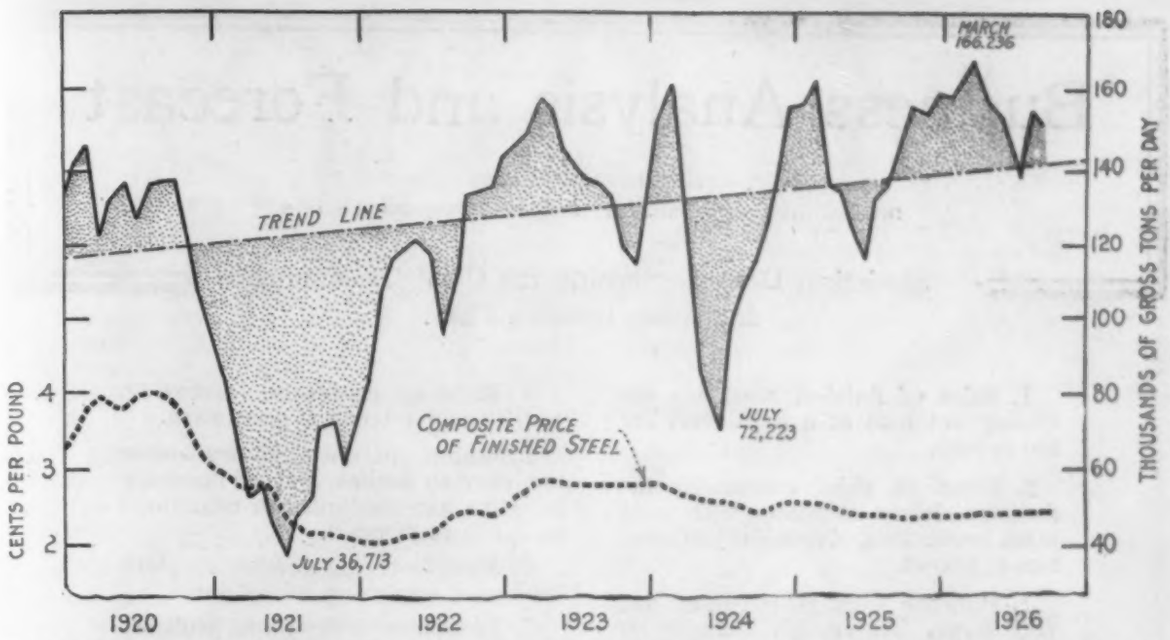
D. W. Trainer, Jr., Cornell University, presented in abstract his paper, "Some Experiments on the Refractoriness of Foundry Sands," in which are given the results of tests made for the sand control committee. The paper includes tables, charts and photographs illustrating the results secured by firing tests of cones and bars made up of sand and clay in various proportions, and of similar tests made on the clay substance extracted from various grades of molding sand.

Discussion

It was pointed out that the test procedure outlined is suitable, rather for laboratory than for shop tests. Major Bull, replying, emphasized the importance in steel foundries of refractoriness tests of the heap sand to guard against its losing its refractoriness by contamination with refuse of various kinds. This is of particular importance because most steel foundries use a large proportion of heap sand in their facing mixtures.

Mr. Hansen stated that the highest softening points that can be hoped for in mixtures of clay and silica sand are not as high as could be desired, leading to partial fusion of the sand in the manufacture of heavy steel castings, and sometimes to serious difficulty and heavy expense in cleaning out cored holes.

John Howe Hall asked Mr. Hansen if the fusing of cores, which he described, was not caused by penetration of metal between the sand grains, rather than incipient fusion and coherence of the sand, and stated that "frozen cores" examined by him contained 48 per cent iron by analysis. Major Bull was of the same opinion. Mr. Hansen replied that he had seen cases of the sand becoming partially fused without penetration of metal, and that in these cases he had sometimes substituted grain alumina for sand in the cores. He expressed the opinion that, for eastern steel foundries, sand control work will eventually lead to the exclusive use of synthetic rather than of naturally bonded sands.



Production of Steel Ingots in September Brings the Nine Months' Total Nearly 3,500,000 Tons Ahead of the Nine Months' Output of 1925. Operations have averaged over 85 per cent of capacity so far this year and could drop to a 60-per cent rate over the last quarter without the total output of 1926 dropping below that of 1925

Decline in September Ingot Output

Daily Rate 2842 or 1.8 Per Cent Less Than in August — Exceeds Any September on Record

STEEL ingot production in September fell off moderately from that in August. At 151,180 gross tons per day for the 26 working days, the output last month was 2842 tons less than the August rate, or a decline of 1.8 per cent. The next largest September production was 136,976 tons per day in 1920. The output last month was 14,204 tons per day, or 10.37 per cent larger than the best September record.

The statistics of the American Iron and Steel Institute show that the September production for the companies which made 94.50 per cent of the country's total in 1925 was 3,714,488 tons. Assuming that the 5.50 per cent not reporting produced at the same rate, a total September output is indicated of 3,930,675 tons, from which the daily rate was calculated. According to the estimates of the institute, September operations were 84.19 per cent of the "theoretical" capacity, compared with 85.75 per cent in August, 78.20 per cent in July, 80.34 per cent in June, 84.51 per cent in May, 88.33 per cent in April and 92.58 per cent in March, the peak of the year.

The table gives the reported production by months of the different kinds of steel, together with the estimated daily rate for all companies.

Production of Steel Ingots

(Gross Tons)

Months 1926	Reported by Companies Which Made 94.50 Per Cent of the Steel Ingot Production in 1925			Calculated Monthly Production All Companies	Approximate Daily Production All Companies
	Open-Hearth	Bessemer	All Other		
Jan.	3,326,846	581,682	13,664	4,150,469	159,633
Feb.	3,023,829	556,031	12,818	3,801,776	158,407
March	3,590,791	635,680	15,031	4,488,362	166,236
April	3,282,435	601,037	13,652	4,123,941	158,613
May	3,201,230	516,676	10,437	3,945,336	151,744
June	3,036,162	498,764	9,441	3,750,653	144,256
July	2,911,375	526,500	12,372	3,651,055	140,425
Aug.	3,145,055	627,273	12,003	4,004,583	154,022
Sept.	3,089,240	612,588	12,660	3,930,675	151,180
9 Mos.	28,606,963	5,156,232	112,078	35,846,850	153,849
1925					
Jan.	3,263,256	689,996	11,960	4,193,281	155,307
Feb.	2,933,225	602,042	12,998	3,752,352	156,348
March	3,337,721	614,860	13,632	4,194,340	161,321
April	2,858,866	515,715	14,152	3,583,676	137,834
May	2,755,561	497,708	13,790	3,454,971	132,883
June	2,540,729	476,945	12,490	3,204,451	123,248
July	2,446,068	457,095	13,547	3,084,472	118,634
Aug.	2,698,285	523,734	12,914	3,420,998	131,577
Sept.	2,738,673	547,121	13,977	3,489,565	134,214
9 Mos.	25,572,384	4,925,216	119,491	32,378,106	138,962
Oct.	3,077,114	584,567	15,624	3,888,814	144,030
Nov.	3,092,194	581,347	17,085	3,902,900	156,116
Dec.	3,169,796	569,304	15,843	3,970,918	152,728
Total	34,911,488	6,660,434	168,043	44,140,738	141,932

Lake Ore Movement Heavy in September

Shipments of Lake Superior iron ore from the upper Lake ports in September were 9,621,756 gross tons or 2,266,883 tons larger than in September, 1925—an increase of 30.82 per cent. The season's shipments to Oct. 1 totalled 45,230,908 tons, comparing with 42,812,026 tons to Oct. 1, 1925. This is an increase this year of 2,418,882 tons or 5.65 per cent. The shipments by ports and for the season in 1926 and in 1925 are as follows in gross tons:

	September, 1926	September, 1925	To October 1 1926	To October 1 1925
Escanaba	1,017,151	765,334	4,806,175	4,174,068
Marquette	598,150	514,189	2,567,612	2,546,433
Ashland	1,153,952	929,011	5,724,526	5,282,958
Superior	2,890,403	2,006,177	12,880,261	11,698,993
Duluth	3,050,476	2,320,742	14,360,447	14,294,847
Two Harbors	1,006,624	819,420	4,902,885	4,814,727
Total	9,621,756	7,354,873	45,230,908	42,812,026
Increase	2,266,883	.....	2,418,882	.....

Duluth's percentage of the season's shipments was 31.75 per cent as contrasted with 33.39 per cent last year. Great Northern's proportion was 25.29 per cent this year against 24.94 per cent last year.

For 800 ft. of 20-in. dredge pipe to be fabricated from plates the Blystone Mfg. Co., Cambridge Springs, Pa., has been awarded contract by the United States Engineers' Office at Savannah, Ga. The company's bid was $3,800.

Business Analysis and Forecast

BY DR. LEWIS H. HANEY

DIRECTOR, NEW YORK UNIVERSITY BUREAU OF BUSINESS RESEARCH

Statistical Data Concerning the Chief Consuming Industries Indicate That:

1. Sales of finished steel are declining but hold at a high level for the season.

2. Trend in chief consuming industries closely correlates with steel ingot production. No maladjustment has appeared.

3. Railroad tonnage irregular but very large. Automobile industry is active but the late 1925 scale of demand will not be repeated.

4. Building contracts increasing, but long time trend is downward.

5. Mining activity shows some tendency to decline, but oil industry is active and continues to contribute its quota to demand.

6. Manufacturing industries show moderate expansion of output.

7. Equipment buying has probably struck bottom and improvement is due.

THE most significant indexes which reflect the demand for steel products do not warrant so much optimism as they did a month ago. In some branches of the industry, demand is brisk, while in others reduced operations are now necessary.

The changes in unfilled orders of the United States Steel Corporation conform closely to the movements of the index of finished steel sales. Both of these indexes declined in August. Curtailed demand was quickly reflected in production, for the adjusted index of steel ingot production showed a sharp reversal in trend during September, leaving August the peak month of 1926, according to the curve of deviation (Fig. 1).

The small increase in unfilled orders during September was partly seasonal but it will put the index of changes in unfilled orders up for the month, and probably indicates a small gain in sales. Other reports for September, however, do not indicate an increase in orders for steel products, which leads to the conclusion that nothing better than irregular production at a high but declining level is probable during the last quarter.

Some recession in ingot production has already taken place as forecast, and further declines are probable. Maladjustments are nevertheless conspicuously absent. While the production curve more nearly resembles the situation that existed in 1923, it must be noted that no badly unbalanced condition now exists such as prevailed at that time. This healthy state of affairs is indicated by the fact that the curve of steel production is not appreciably higher than the potential current requirements. The steel ingot output continues much above normal but has been justified by current requirements.

No Rush of Freight Car Buying Expected

The activity of the industries consuming steel is the potential demand for that commodity and will determine future tendencies. The *railroads* have been handling a large volume of traffic. Our adjusted index of railroad tonnage has become markedly irregular, but, following an August setback, September tonnage, after allowing for seasonal changes, was near the highest rate of the year. The large volume of traffic must eventually increase the demand for steel, especially as the roads are relatively prosperous. There is no car shortage, however, and no great rush of buying of freight cars is to be expected.

Increased Activity in Building Industry

Building activity as measured by the floor space contracts awarded increased during August more sharply than is usual for the season. September contracts put the adjusted index up again, indicating increased activity in the building industry. Contemplated construction has shown a continued, irregular decline for nearly a year, but it also recovered rather sharply last month. Building permits, however, fell off during September, making the sixth successive month of decline. Some of the uncertainty in the building situation is reflected in smaller demand for structural steel in recent weeks.

Automobile production during August moved up at a rate closely corresponding to that of building con-

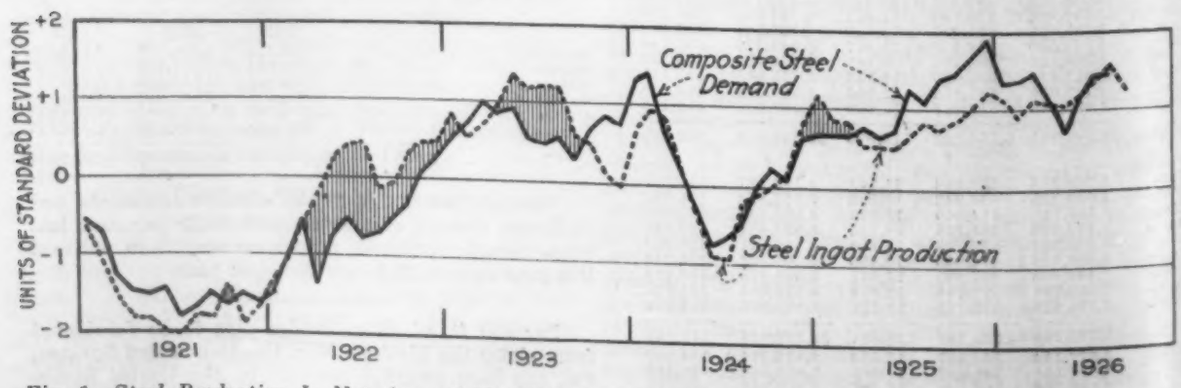


Fig. 1—Steel Production Is Not Appreciably Higher Than Potential Requirements, as Shown by the Composite Curve of Steel Demand. There is not the unbalanced situation existing in 1923

In This Issue

Gives open shop credit for Detroit's industrial eminence.—Only 3 per cent of automobile city's labor is "closed shop." Labor is well paid and prosperous and enjoys steady employment, proving that both employer and employee gain by freedom from union domination.—Page 1076.

Slight decline in steel output in September.—Average daily production was 151,180 tons, which was 2842 tons below August rate, but 16,966 tons per day above September of last year.—Page 1079.

Does the type of scrap charged into open-hearth furnaces affect the ingot yield?—Light scrap reduces the yield, says one superintendent. Government metallurgist agrees with him, declaring that heavy scrap has only about one-fourth the oxide content of light scrap. But other steel mill men declare the difference in the yield is negligible.—Page 1060.

Underground ventilation as well as overhead is provided in new sheet and tin plate mill.—Flared nozzles over the door of each sheet furnace and floor stands, through which air is blown, reduce the discomfort caused by high temperatures.—Page 1063.

Progressive American manufacturing methods are closely followed by Germany.—But individualistic preferences in home market hamper low cost quantity production. War-born hatreds have been sensibly forgotten, and all concerned are working toward a prosperous future.—Page 1067.

Disproves old belief that the more graduai the reduction in rolling copper bars, the better the physical properties.—Western Electric Co. finds that the *fewer* the passes the better the elongation.—Page 1055.

Long predicted slump in building construction is still conspicuously absent.—Contracts in the 37 States east of the Mississippi totaled over 562 million dollars in September, 6 per cent below August and 1 per cent under September, 1925.—Page 1068.

Inability to pay higher wages and salaries has prevented machine tool builders from holding their best employees in face of better pay offered by industries enjoying larger profits.—Association head urges members to sell at a price which will permit builders to pay for the knowledge and skill built into their machines.—Page 1070.

When selling prices go up, wages rise.—British steel mill labor is paid an adjustable wage based on selling price of steel, through agreement between employees and employers, each group being highly organized. American steel mill common labor rates are about twice as high as England's.—Page 1074.

What property of molding sand causes scabbed castings?—Excessive strength and moisture, says one foundryman. The only remedy is the addition of new sand.—Page 1077.

Further declines in steel output are probable, says Dr. Haney.—Healthy condition, however, is indicated by the balance between requirements and output.—Page 1080.

Looks for continuation of good business up to and beyond first of year.—Survey made by National Association of Manufacturers shows 16 per cent expect excellent winter business and 83 per cent good to fair, while only 1 per cent say business will be poor.—Page 1085.

Is the Ford five-day week prompted by the belief that the time has come to give labor a two-day rest?—Or is it a necessity occasioned by sales volume? That American industry has reached the stage where labor for five days instead of six will be sufficient is decidedly questionable. An industry permanently overexpanded should discard its surplus capacity instead of uneconomically operating the whole for part time.—Page 1088.

Purchasing agents believe iron and steel prices will not change materially for many months.—Scrap, they believe, may fluctuate from 50c. to $1 a ton. Declare that "short turn-over" buying has been the biggest factor in stabilizing the market.—Page 1087.

Finds that drawing speed of copper wire does not materially affect quality.—Governing factors are lubrication of the wire, proper dies, and suitable take-up mechanism to maintain constant drawing speed.—Page 1056.

Automotive output this year about 15 per cent above last.—Though sales are gradually declining along with production, in keeping with the seasonal trend, the market is still above normal, and 1926 is expected to set a new record for the industry. The gain has been wholly in the domestic market.—Page 1061.

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Serving 83 Per Cent of the Field

OF the 336 manufacturers exhibiting at the recent steel and machine tool exposition held at Chicago by the American Society for Steel Treating, the manager of our Reader Service Department finds that 278, or 83 per cent, are IRON AGE subscribers.

The showing is impressive. There is first the fact that exhibitors at a show of this kind are growing, progressive firms. Of this type we can thus own to having practically seven out of eight as regular readers.

Then there is to be considered the diversity of products manufactured by the exhibitors. There were machine tools, welding equipment, electrical equipment, case hardening compounds, small tools, steel, heat treating equipment, insulating materials, conveying equipment, bearing metals, metal-cleaning compounds, refractories, abrasives, ferroalloys, springs, lubricating equipment and ball bearings—without exhausting the list.

For News Summary See Reverse Side

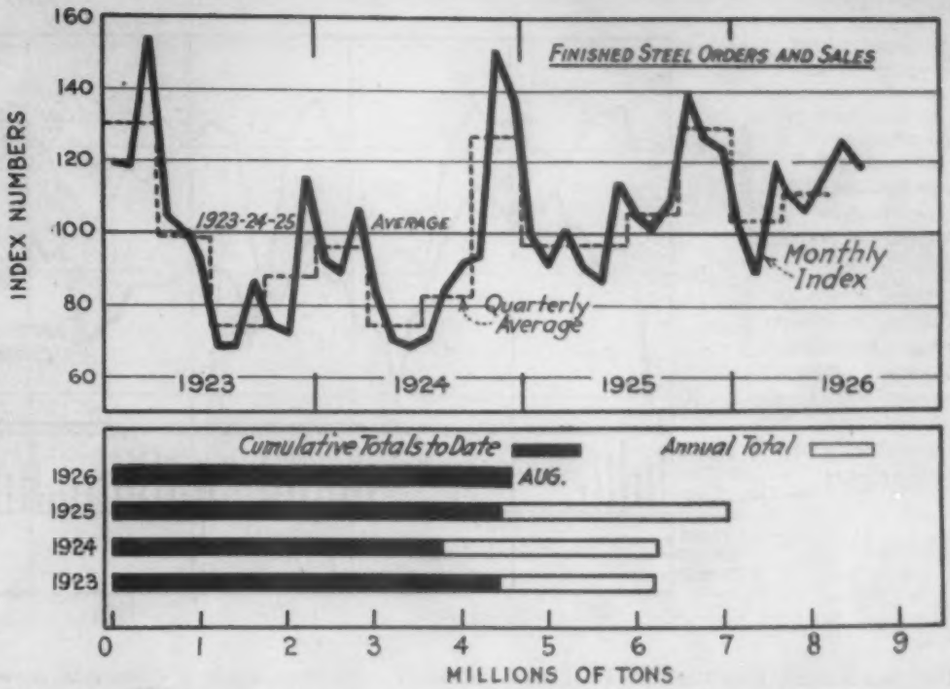

Fig. 2—Finished Steel Orders and Sales Reached in August the Highest Point for That Month in Any Recent Year. Also, the cumulative total for the first seven months is larger than for the like period of any recent year

tracts. Some seasonal decrease is customary in September, but even after making allowance for such factors the demand by automobile manufacturers for steel has been disappointing recently. The large demand for automobiles during late 1925 probably will not recur in 1926 with the exception of one or two of the leading manufacturers in the industry.

Industries Showing Irregularity and Recession

Our seasonally adjusted index of activity in *manufacturing industries* (excluding iron and steel and automobiles) moved up about 1 per cent during August to the highest point since April. While larger than a year ago, activity still falls short of the late 1925 peak. The trend of *machine tool* orders showed scarcely any change from July to August. The peak was passed in June and since then demand has been no better than fair. Our composite of activity in the *petroleum and mining* industries registered a decline due chiefly to a downturn in the trend of coal production which outweighed increases in copper and crude petroleum activity.

Agricultural purchasing power improved in July, but the recent price declines in cotton and grains make it doubtful whether or not the gains can be held. The value of the farm dollar in terms of non-agricultural commodities has been declining.

It continues unlikely that there will be any sustained increase in *exports* in the near future. The termination of the British coal strike will not only decrease coal exports but later on will affect tin plate and other steel items.

The net conclusion derived from the foregoing analysis is that potential weakness has developed and that a period of irregularity and recession lies ahead. The depression levels to which raw cotton has fallen will impair the farm purchasing power; the long-time trend of building is downward; price cutting and curtailment are reported from the automobile industry. There are not enough offsetting favorable factors to warrant a bullish position.

Highest August in Steel Sales

SALES and orders of finished steel, as a composite, declined in August. The number of products whose sales increased equaled the number which decreased, but those which decreased (such as sheets) are the larger items. The August level of sales, however, was the largest for that month during the period shown in the graph. One of the items which increased in August was the sales of structural steel, but in view of the decline in the average weekly awards during September a renewed decline is probable.

At the bottom of the second chart (Fig. 2) is shown a race between the various years for the record total tonnage of finished steel orders. To the end of August,

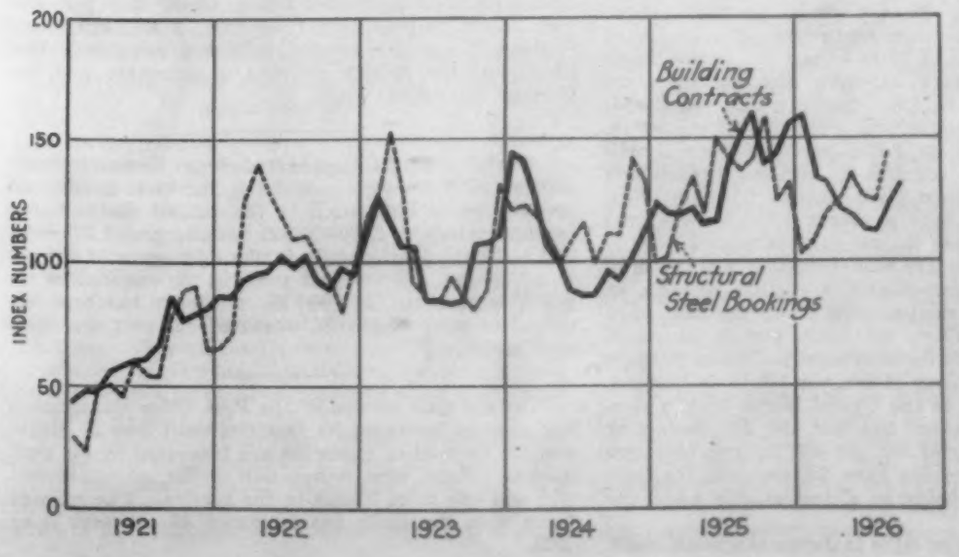

Fig. 3—While Building Activity Is Large and, Measured in Terms of Floor Space, Increased in September, the Record of Building Permits That Month Was the Sixth Consecutive Monthly Decline. The prevailing trend in fabricated structural steel is believed also to be downward

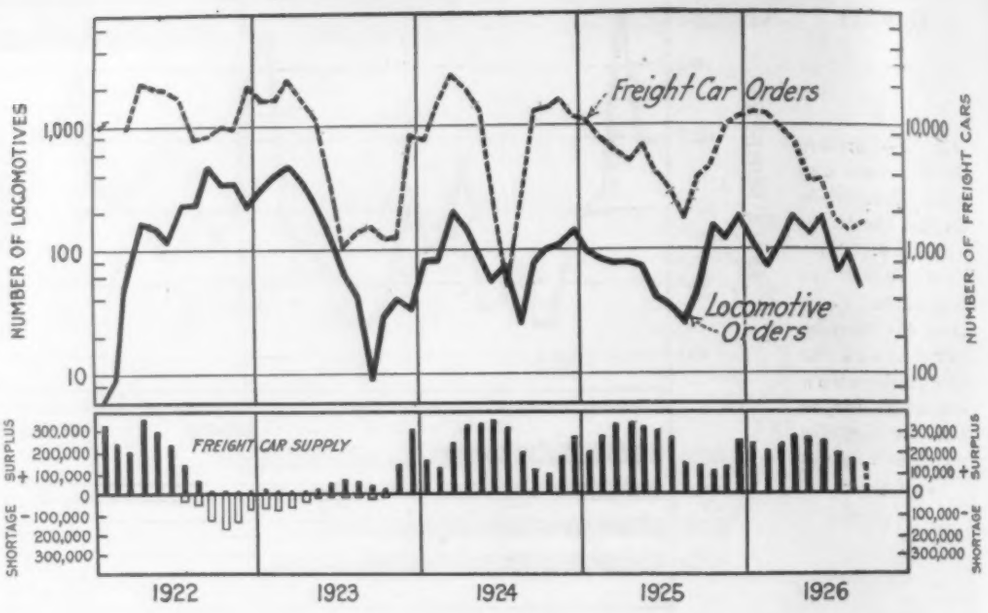

Fig. 4—Freight Car Orders in September Registered a Sharp Increase, Which Is Likely to Continue for Some Time. Both curves are here plotted as a 3-month moving average

1926 was leading, with 1925 in second place instead of 1923 as at the end of July.

Structural steel sales moved up sharply in August with building contracts, but it does not seem probable that either gain can long be held.

Improvement Due in Railroad Equipment Field

THE domestic orders for locomotives in September reported by the *Railway Age*, amounted to 31, as compared with 84 in August. The decrease was not entirely due to the greater number of days in August. Neither was the drop of a seasonal nature, for this was the first decrease in September during the five-year period shown in the graph. The unfilled orders of the chief locomotive manufacturers, as reported by the Department of Commerce, showed small declines in August and September, but were greater than in the same months of 1924 or 1925. Shipments gained in September and were greater than a year ago. It may be concluded that the low point of 1926 is at hand and that an improvement is probable in the last quarter.

Domestic freight car orders in August were at the five-year low, so that the next move could be expected to be upward. September registered a sharp increase which is likely to continue for some time. The freight car surplus on Sept. 23 was 124,142 cars, but there were fewer cars in need of repair than in the preceding week.

Schedule of the next installments of the ***Business Analysis and Forecast****, by Dr. Lewis H. Haney, Director New York University Bureau of Business Research, follows:* ***Oct. 21****—Position of Iron and Steel Producers;* ***Oct. 28****—General Business Outlook;* ***Nov. 11****—Activity in Steel Consuming Industries.*

IMPORTED STEEL HIGHER

Recent Advances in European Prices of $3 to $4 Per Ton Reduce Savings to American Consumers

NEW YORK, Oct. 11.—Importers in New York are encountering slightly more difficulty in the sale of foreign steel to American consumers as a result of recent price advances of $3 to $4 per ton on the European product. German importers are quoting plain steel bars at 1.80c. to 1.85c. per lb., c.i.f. duty paid, reinforcing bars of structural grade at 1.90c. per lb. and beams at 1.70c. to 1.75c. per lb. Open hearth grade is about 10c. per 100 lb. higher. French and Belgian importers quote plain bars at 1.70c. to 1.75c. per lb., reinforcing bars at about 1.85c. per lb. and beams about 1.70c. per lb., all c.i.f. duty paid.

While these prices are still competititve when shipments are not too far inland, a further increase in these quotations would probably bring the mill price in some instances above the 1.50c. per lb. at which a duty of 30c. per 100 lb. is exacted and place them in the class on which a duty of 50c. per 100 lb. is charged. The cost of delivery to the United States from a German mill averages about 25c. per 100 lb. Deducting this rate and the duty of 30c. per 100 lb. from the price of open hearth reinforcing bars, for example, the f.o.b. mill price would probably be almost exactly 1.50c. per lb., base.

Export by American mills to Japan continues small. Demand for tin plate is still active and prices have dropped back to about $5.65 per base box, c.i.f. Japanese port. Among numerous current inquiries for small lots is a specification covering about 9000 base boxes of large sizes. An inquiry for 1000 tons of light gage black sheets is reported in the market but the price of mills in the United States is slightly higher than recently, quotations being about $83 per ton, c.i.f. Japan, instead of $81 per ton. Both British and German prices are several dollars a ton under this price, but the British delivery is uncertain and the German capacity is small.

According to the Copper and Brass Research Association, 25 Broadway, New York, the total number of small coins in circulation in the United States today is approximately 4,500,000,000 pennies and 1,225,000,000 nickels. They contain in the aggregate 34,000,000 lb. of copper. In the past year, in the association reports, more than 2,000,000 lb. of copper has been required to mint $5,115,675 worth of one-cent and five-cent pieces.

The air mail service of the Post Office Department has steadily increased its facilities until now 29 States and the District of Columbia are traversed by air mail planes. Three new routes now under advertisement will add two more States to the service. The mileage flown with the mails has increased 45 per cent since 1921.

GOOD YEAR-END BUSINESS

Survey of National Association of Manufacturers Shows Highly Favorable Conditions

A continuation of the present commercial activity over into the turn of the year is indicated by the results of a trade survey by the National Association of Manufacturers presented to the convention in New York, Oct. 7. The survey was made by means of a questionnaire sent to members of the association, embracing manufacturers in various lines.

The consensus as to present trade was 92 per cent favorable, 19 per cent reporting it excellent, 73 per cent good to fair, and only 8 per cent pronouncing it poor.

Prospects for the winter were viewed as excellent by 16 per cent, good to fair by 83 per cent, and poor by 1 per cent.

Normal stocks on hand were reported by 76 per cent and low by 16 per cent, with 8 per cent reporting an overstocked condition.

An adequate supply of labor of all classes was reported by most of the answers, but 10 per cent reported a shortage of skilled labor and 4 per cent of unskilled workers.

Wages were reported higher than last fall by more than 89 per cent, of whom more than 5 per cent noted a large increase, while 9 per cent noted a small decrease and less than 1 per cent a large decrease.

More than 99 per cent reported their industries free of strikes, and 4 per cent of the answers claimed to have eliminated them entirely.

Machinery and Hardware

In machinery, hardware and tools, present trade was reported excellent by 19 per cent, good to fair by 74 per cent, and poor by 7 per cent. Excellent winter prospects were reported by 12 per cent, good to fair by 84 per cent, and poor by 4 per cent. Better business than last fall was reported by 54 per cent, unchanged by 35 per cent, and lower by 11 per cent. Normal stocks on hand were reported by 79 per cent, low by 16 per cent, and over by 5 per cent. A large increase in employment as compared with last fall was reported by 12 per cent, a small increase by 61 per cent, a large decrease by 2 per cent and a small decrease by 25 per cent. Sixteen per cent reported a shortage of skilled labor, and 4 per cent reported a similar condition as regarded unskilled workmen. A large increase in wages was reported by 3 per cent, and a small increase by 97 per cent. Production increases where reported averaged 17 per cent, with the reported decrease averaging 11 per cent. Sales quantities were reported increased an average of 17 per cent, decreased an average of 9 per cent. Sales values increases averaged 19 per cent, the decreases 7 per cent. The industry was 99 per cent free of strikes, and 5 per cent reported them eliminated.

Conditions in Metals

In metals, excellent present trade was reported by 17 per cent, good to fair by 80 per cent and poor by 3 per cent. Excellent prospects for winter were reported by 17 per cent, good to fair by 83 per cent. Business was reported better than last fall by 44 per cent, lower by 40 per cent, and unchanged by 16 per cent. Sixty-two per cent reported a large increase in employment, 4 per cent a small increase, 2 per cent a large decrease and 32 per cent a small decrease. A small increase in wages over last fall was noted by 86 per cent, with 14 per cent reporting a small decrease. Production increases reported averaged 14 per cent, with the reported decreases averaging the same. Where increased sales quantities were reported the average was 17 per cent, with the average reduction 18 per cent. Reported increased sales values averaged 18 per cent, with the decreases averaging 16 per cent. The industry was reported 98 per cent free of strikes, with 3 per cent reporting them eliminated.

PROGRESS IN ORDNANCE

Groups Promoting Industrial Preparedness See New Developments at Proving Ground Demonstration

The Army Ordnance Association, a national organization interested in industrial preparedness, particularly in connection with the design and manufacture of ordnance material, was given an opportunity to see the latest developments in military preparedness at its eighth annual meeting, held Oct. 8 at the Aberdeen Proving Ground of the Ordnance Department of the Army, Aberdeen, Md. Other organizations represented at the meeting were the American Society for Steel Treating, the National Industrial Conference Board, the National Association of Manufacturers, and the Reserve Officers' Association of the United States.

How 16-In. Rifle Compares with Gun Which Bombarded Paris

A feature of the many demonstrations of the use of arms and equipment was the shooting of a 16-in. rifle on a Barbette carriage, which is the largest weapon ever constructed in this country for seacoast defense. Having a maximum range of over 30 miles, the gun can maintain a rate of fire of about one round per min. The rifle is 68 ft. long, weighs 170 tons and uses a charge of 700 lb. of powder to shoot a projectile weighing 2100 lb. The speed of the projectile is 2750 ft. per sec. The famous German gun which bombarded Paris had a longer range, but its bore was only 8¼ in., and it used only 25 lb. of explosive to shoot a projectile weighing 264 lb.

The American 16-in. gun is an armor-piercing weapon, capable of penetrating 16 in. of armor plate. Unlike previous types of long-range guns, it has a flat trajectory and is emplaced in the open without parapets and with magazines dispersed. It is a built-up rifle, consisting of a tube with hoops shrunk over it. In operation it has several automatic features, although it is not entirely automatic. The breech block goes in, is rotated, and is opened by compressed air. The gun has a mechanical rammer and has electrical elevating and traversing devices, although it may be traversed by hand. Dating back to 1918, the gun only recently has been made standard and is now being installed at the principal harbor defenses.

Railroad Mount Guns Important in Coast Defense

Since the United States has an unusually long coast line, the development of mobile coast defense artillery is of prime importance. The shooting of a 12-in. gun on a railroad mount was demonstrated to illustrate the effectiveness of such equipment. This rifle has a range of almost 16 miles, but a larger weapon, a 14-in. railroad mount gun, now standard equipment, has a range of about 22 miles. The value of these guns, of course, lies in the speed with which they can be transported to points threatened with attack. A 14-in. gun was taken on a test trip to Los Angeles last year to ascertain how it would stand a long haul. Owing to the great weight of the gun, there were frequent inspections of the bearings of the trucks during the first part of the trip to guard against overheating of journals. At length it was found possible, however, to transport the gun at a speed of 25 to 30 miles an hour. For shooting, the car on which the gun is mounted is fastened to the ties with steel skids.

New Range-Finding Instrument

In a demonstration of anti-aircraft fire against targets towed by airplane, the latest type of range-finding instrument, a Vickers Mark 3, was employed. This instrument covers both the range and speed of a target and can control the range of as many as 100 guns at a time. It automatically figures the angles and makes necessary corrections for wind. The range

and the speed of the target are separately transmitted by wire to dials on the guns.

Sound Locaters Employed for Night Firing

In night firing at aerial targets, sound locaters were employed to find the position of the targets. The locaters are connected with searchlights by a comparator, by means of which the light is directed to the position of the target. The 60-in. Sperry searchlight, which is employed, is illuminated with an 800,000,000 candle-power light, which throws out a beam 7 miles in length.

Maneuvers of a large array of motor-driven vehicles proved one of the most spectacular events on the program. Tanks, tractors for gun carriages, self-propelled guns, and cross-country passenger and cargo vehicles gave demonstrations separately and simultaneously. A 75-mm. motor-driven gun carriage proved unusually speedy and mobile. It has a rated speed of 30 miles per hr. on good roads.

DISCUSS REFRACTORIES

Mining Engineers' Meeting at Pittsburgh Also Covers Blast Furnace Burdens

The 134th meeting of the American Institute of Mining and Metallurgical Engineers opened formally at Carnegie Music Hall on the morning of Oct. 6 with an address of welcome by President Samuel A. Taylor, whose subsequent remarks dwelt heavily on the growth of the coal industry in western Pennsylvania. The response was by Dr. John S. Unger, Carnegie Steel Co., who recited some very interesting statistics of the steel industry of the Pittsburgh district. Technical sessions were started after luncheon.

Prof. Stephen L. Goodale, University of Pittsburgh, presided at first meeting of the iron and steel committee, held in the Rehearsal Room, Carnegie Institute. James Aston, professor of mining and metallurgy, Carnegie Institute of Technology, in his paper, on "Trend of Development in the Wrought Iron Industry," reviewed the efforts that had been made to find a satisfactory mechanical means to replace manual puddling of iron, and then described his own process for making wrought iron, holding closely to a description he gave in a paper before the American Iron and Steel Institute a year ago.

A paper written by William J. Priestley, vice-president Electro-Metallurgical Sales Corporation, New York, and read by R. H. Foster of that company, described a large hydraulic forging press installed at the Naval Ordnance plant at Charleston, W. Va., during the war for forging ingots and bending armor plate. Mr. Priestley during the war was steel works superintendent of that plant.

"Tests on Galvanized Sheets," a paper by H. A. Stacy, Bureau of Yards and Docks, Navy Department, Washington, told of the tests that had been made by a governmental committee, explaining the limitations of the numbers of bends, their degree and their speed. The paper afforded some evidence of advance in the art of fabrication of galvanized sheet metal, but results were erratic enough to indicate the need of additional experimentation.

Effect of Open-Hearth Process on Refractories

F. W. Schroeder, assistant chemist, and B. M. Larsen, assistant metallurgist, Pittsburgh station, United States Bureau of Mines, were co-authors of a progress report on the effect of the open-hearth process on refractories. The summary of the report read:

In the basic open-hearth furnace, the charge and molten steel form enough tiny oxide particles to give outgoing gases a dust content of a few grams per 100 cu. ft., in which iron oxides predominate, varying in amount from about 50 to 90 per cent and approximate magnetite in composition. The lime content varies from 0 to 20 per cent, and small amounts of Mn_3O_4, MgO and SiO_2 are present. The lime and magnesia have their source in the dusting of burned lime, limestone and dolomite. The other oxides are produced by "burning" and by vaporization during the melting and boiling periods.

Below a temperature range of about 2550 to 2650 deg. Fahr., not yet definitely determined, the oxide particles simply deposit to form a sintered layer on fire clay and silica brick. This is the usual condition in checker chambers. On silica wall surfaces above this temperature range, as in the upper port ends, ports and melting chamber, the oxides flux with silica to form a fluid slag on the wall surfaces. During the first week or so of a furnace campaign, the porous silica brick absorbs the liquid phase formed from oxide particles and silica, and recrystallize into a definite zone structure. This zone structure approaches a sort of equilibrium with the surface atmosphere; its softening range is 60 to 10 deg. Fahr. lower than that of the original brick. Fluxing, then, is localized at the saturated brick surfaces, and the result is slow corrosion of the walls. The speed of corrosion varies in accordance with currents of gases in the furnace and the amount of oxide particles carried to the brick. The open-hearth furnace operates close to the minimum softening range of the flux-saturated silica walls. In the melting chamber their surfaces often are overheated and fused. Spalling and fusion and combination of spalling and fusion often cause localized wear in certain areas in addition to the normal wear by fluxing.

"Optical Temperature Measurements in Open-Hearth Furnace," a joint paper by B. M. Larsen and J. W. Campbell, the latter research fellow, Carnegie Institute of Technology, the authors using the disappearing filament type of optical pyrometer, disclose results of temperature measurement of open-hearth furnaces made in connection with a study of refractories service. Their conclusions are somewhat at variance with those of other investigators, particularly with respect to the temperature of furnace surfaces during steel marking.

Blast Furnace Problems

Prof. James L. Aston was chairman of the technical session of the iron and steel committee on the morning of Oct. 8. This was a blast furnace session, with papers by Richard Franchot, vice-president, Ferro-Chemicals, Inc., Washington, on "Specific Efficiency of the Blast Furnace"; by W. C. McKee, general superintendent, Federal Furnace plant, By-Products Coke Corporation, Chicago, on "Iron and Steel Scrap in Blast Furnace Burdens," and by Richard S. McCaffrey, professor of metallurgy, Joseph F. Oesterle, assistant professor, and Leo Schapiro, fellow, University of Wisconsin.

Mr. Franchot sought to establish that solution loss was due to excess shaft heat, accentuated by a circulating load of cyanides, and that a balance between hearth and shaft heat can be attained by the removal of a portion of the gas from the shaft. These and other points were questioned by T. L. Joseph of the Minneapolis station of the United States Bureau of Mines, who had a written discussion of the paper.

Mr. McKee, on the use of scrap in the blast-furnace burden, concluded that if the proper attention is given the chemical composition and physical condition of the scrap it is possible to produce high-grade iron in increased tonnage over a straight ore charge, and that there will be a reduction in the amount of coke necessary to reduce the charge. T. T. Read, assistant secretary, American Institute of Mining and Metallurgical Engineers, New York, in a written discussion questioned Mr. McKee's conclusions as to coke consumption, pointing out that there had been no agreement as to the exact amount of coke required to melt a ton of scrap in the blast furnace, and, further, stating that there could be no agreement when the question was put that way, for the essential factor is not coke, but the percentage of carbon in the coke, and there was

wide variation in carbon content of coke used in different blast furnaces.

The paper of Messrs. McCaffrey, Oesterle and Schapiro represented a continuation of the work that was the subject of a paper given by Professor McCaffrey before the American Iron and Steel Institute in October, 1924, "Constitution of Iron Blast Furnace Slags."

PURCHASING AGENTS MEET

Expect Little Change in Iron and Steel Prices for Many Months

That iron and steel prices probably will not change materially for many months was the consensus of opinion of the delegates attending the iron and steel conference held in connection with the second annual convention of the sixth district of the National Association of Purchasing Agents at the Hotel Gibson, Cincinnati, Oct. 8, 9 and 10. Pig iron is likely to stay at its present level during the winter and early spring, but no prediction beyond next April 1 can be made because of the possibility of a bituminous coal strike at that time. Scrap iron and finished steel also are firm at present quotations, and any radical change in prices is remote. The former, however, may fluctuate from 50c. to $1 a ton.

Declaring that hand-to-mouth buying has been the biggest contributing factor in stabilizing the market, B. F. Downey, Yost Superior Co., Springfield, Ohio, chairman of the conference, said that "if buyers will continue their present purchasing policy, the mills will have an opportunity to handle more orders totaling an increased aggregate tonnage without the impression developing that the trade will absorb price advances without complaint." Mr. Downey summarized the market conditions in all of the leading iron and steel commodities. In speaking of a possible car shortage, he pointed out the fact that the increased efficiency of transportation lines and the work of traffic associations have made a shortage unlikely. He urged carload users to load and unload freight as rapidly as possible, so as to release cars for other service.

The suggestion was made at the meeting that the term "hand-to-mouth buying" be abandoned in favor of the expression "short turnover."

A. G. Hopcraft, Ferro Foundry & Machine Co., Cleveland, and H. C. Wickline, Union Steel Castings Co., Pittsburgh, were among the speakers. The general discussion was participated in by many of the members. W. H. Reuter, Littleford Brothers, Cincinnati, was the secretary of the conference.

Seven Limiting Factors of Production

There are seven limiting factors of production which indicate the state of business, according to Dr. Herman Schneider, dean of the Engineering College, University of Cincinnati, in addressing the general session of the convention. They are demand, fluid capital, transportation, labor, raw material, equipment and power, including coal supply. When one of these factors obviously is out of line, the whole business structure is in serious danger of tumbling. A thorough study of simple economic principles is a necessary function for the purchasing agent, whose decisions are of such vital importance to stockholders. The translation of these principles into terms of policy is a matter of judgment and common sense, based upon a knowledge of the economic principles and the charting of conditions.

Demand for Purchasing Agents with Technical Training

There is a growing demand for purchasing agents with technical training in science, economics, finance and all of the intricacies of modern business, stated W. L. Chandler, national secretary, at the opening meeting. "Some of our members, with the approval of their corporations, are adding to their staffs chemical, electrical and mechanical engineers to aid them in keeping informed of changing conditions. While it is not possible for one person to keep abreast of the latest developments in all of the sciences, he can secure the benefit of expert counsel."

Members of the local committee in charge of the convention included T. W. Marz, Newport Rolling Mill Co.; Harry Fenner, Cincinnati Shaper Co., and L. W. Scott Alter, American Tool Works Co.

Pittsburgh Entertains European Foundrymen

PITTSBURGH, Oct. 11.—Shown as much of industrial Pittsburgh as it is possible to see in two days, the overseas delegations of foundrymen to the recent convention of the American Foundrymen's Association at Detroit, making their way back to the seaboard, were assured of the pleasure their visit was to fellow craftsmen in Pittsburgh at a dinner given at the Fort Pitt Hotel, Pittsburgh, Saturday evening, Oct. 9. The mutual good to come from the interchange of visits and of ideas was frequently voiced in the speeches following the dinner.

The delegations, numbering more than 100 reached here from Cleveland on Thursday evening, under the escort of Dean Clifford B. Connelley of Carnegie Institute of Technology, member of the reception and entertainment committee of the Pittsburgh Foundrymen's Association, which was host to the visitors. The remainder of the committee was at the station to greet the visitors on their arrival.

On Friday morning there was a trip of inspection of Edgar Thomson Steel Works of the Carnegie Steel Co., at Braddock, Pa., after which the party was conveyed to the East Pittsburgh plant of Westinghouse Electric & Mfg. Co., where luncheon was served. This was followed by a trip through the electrical plant of the company after which the foundry of the Westinghouse Air Brake Co., at Wilmerding, Pa., was visited. There was much of interest at this plant for the foreign foundrymen, particularly the making and baking of the intricate cores for the castings of parts of the air brakes and railroad signal devices.

John Cameron, past president, Institute of British Foundrymen in responding for the overseas delegations at the dinner on Saturday night declared that the foundry work at this plant was the most interesting he had seen in any of the plants visited in this country and that nowhere in the world did he believe there was such good core baking as at this plant.

Frank J. Lanahan, president Fort Pitt Malleable Iron Co., was introduced by Laurence V. Stevens, president Pittsburgh Foundrymen's Association as toastmaster at the dinner. The introduction of the foreign delegations, the head of each of which arose, was by Dean Connelley and the response was made by John Cameron of the British delegations. Talking as a gray iron foundryman he saw that knowledge of cast iron was in its infancy and said he was impressed with the belief that iron castings of greatly improved quality can be made. He expressed the hope that a deputation of trade unionists from European foundries might visit American foundries and not only see how American foundries perform, but might learn something from the fine relations existing between founders and their men.

David F. Crawford, general manager Locomotive Stoker Co., Pittsburgh, through Mr. Lanahan, expressed thanks to the visiting delegations for the papers they had presented at the Detroit convention.

The entertainment of the visitors was in the hands of a committee of the Pittsburgh Foundrymen's Association headed by Samuel B. Cuthbert assisted by Henry P. Spilker, John Field, A. J. Hartman, L. J. Kelly, O. C. Dobson, H. W. Petty, Thomas A. Reynolds, Jesse Jones, Frank J. Lanahan, John S. McCormick, John W. Guay and Clifford B. Connelley.

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Ford's Five-day Week

ANNOUNCEMENT of the Ford Motor Co.'s intention to put its great manufacturing plant on a five-day operation per week started an outpour of economic discussion. This would not have happened if the management had not put out explanations of its intention; for the Ford Motor Co. is not the first producer to go on a five-day period, or for that matter a three-day, or a two-day. The simple interpretation of its proposed action and explanatory remarks is that the sale of Ford cars has been declining in the face of the competition of the General Motors Co. and other producers, that the Ford plant could no longer be operated wisely at full capacity, and that its management in explaining its retraction made a virtue out of a necessity. In the light of this fact we need not concern ourselves with some collateral, cryptic remarks in respect to wage rates, etc.

The mischief of the Ford declaration emanated from the widespread public interest in everything relating to Henry Ford and his business. There is no other industrial enterprise that is so widely known and consequently is so influential. William Green and his cabinet guiding the American Federation of Labor promptly rose to the occasion and announced that the five-day week would be one of the aspirations of that labor union. In passing it may be mentioned that several branches of the building trade in some districts have been for a long time enjoying a five-day week, which has been contributory to the high cost of building houses and the continuing shortage of housing available on decent terms.

The idea that American industry has become so improved in its mechanization and organization, or is likely to hit on such further improvements in the next few years, that labor in five days out of seven instead of six out of seven will be sufficient, is buncombe. Dr. W. R. Ingalls, in a recent contribution to the *Annalist*, estimated the American income in 1925 at 72.9 billions of dollars, or $1,584 per worker, compared with 69.5 and $1,531 in 1924 and 71.9 and $1,613, respectively, in 1923. These estimates of the national income are substantially in tune with those of the National Bureau of Economic Research and the Federal Trade Commission in so far as those authorities have gone, 1921 being the last year for the former and 1923 for the latter.

Dr. Ingalls expressed himself unable to see the evidence of increased productivity per worker that propaganda has practically made a matter of general belief. He considers that the increased national income is rather correlated with increasing population and the high post-war price level.

Coming down to things of every day observation, no one would dream that the railroads, farms and retail shops of the country could be operated on a five-day basis and give us the service that we must have. It is probable, on the other hand, that there are many over-built and over-manned manufacturing industries that could be operated on reduced time. It is simply a question whether part of their capacity shall be used full time or their whole capacity part time. If an industry be permanently in that situation its surplus capacity ought to be discarded and its surplus personnel diverted to other work. If an industry be not over-built and over-manned—building, for example—curtailment of working time means simply shortage of product and eventually serious economic evil.

We are just now getting much strange economic opinion, which by its illusory plausibility is sowing the seeds of trouble. There is preached the economy of consumption, meaning that the people should be egged on to produce and immediately to consume as much goods as possible. Recommendation is made on that ground in favor of a five-day week. With the additional day of leisure it is assumed that everybody can burn more gasoline, participate more extensively in amusements, etc. This philosophy entirely disregards the need for producing capital goods and more of the durable things of other natures.

We do not believe the new economic theory will really replace the old one. To a large extent it came out of "Alice in Wonderland," and its "wise cracks" are reminiscent of those of The Walrus and the Carpenter.

Judge Gary at Four Score

PROBABLY no expression about the United States Steel Corporation has been heard so often in the steel trade in the past 15 years as that no man among Judge Gary's contemporaries could have directed the corporation's affairs with more wisdom and capacity than he has shown. There was no surprise, therefore, at the character of the tributes paid him on Oct. 8, when his friends marked the completion of his 80th year. It is well known that the policies of the Steel Corporation represent a meeting of minds—much more than average minds—on matters of great import in its relations with its workers, its customers, its competitors and the public. Yet it is recognized that Judge Gary has had a large part in the initiation and shaping of these policies, and that many of them, indeed, may well be credited to him. He appreciated sooner than most of his associates in the early years of the steel corporation the change that had come in the relations of great corporations and the public, and that new accountability rather than new power was the chief factor in this momentous change.

He has been the corporation's voice and the interpreter of its acts and its aims to a public that from the beginning has shown more interest in the Steel Corporation than in any industrial organization in the country's history. It is the corporation's good fortune that it has had such a voice and such an interpreter. But for Judge Gary's testimony and bearing in the dissolution suit, the court's interpretation of the Steel Corporation's conduct and purposes would probably have been quite different.

Though not a steel maker himself, Judge Gary's leadership of the industry in the 18 years of his presidency of the American Iron and Steel Institute has been by a general consent that makes his position wholly unique. As the advocate of cooperation, as against the Carnegie regime of aggressive and even destructive competition, Judge Gary has done a piece of constructive work that will bear fruit for many years and that has well earned him the lasting gratitude of his contemporaries. However the present generation of steel makers may admire the Carnegie daring, none of them, in the light of these past 25 years of Steel Corporation history, is willing to imitate it.

On his marvelous energy and mental alertness at 80 and his prospect of continued usefulness we congratulate Judge Gary, the Steel Corporation and no less the industry, in the advancement of which he has borne so distinguished a part. In the concluding words of his biographer: "He has made a lasting contribution to our difficult and often baffling problem of substituting in American business balance for instability, mutual interest for militarism, cooperation for defiance, frankness for secrecy, goodwill for distrust. No man in contemporary affairs has more honestly earned the high title of industrial statesman."

SUGGESTING that there is always the danger of thinking "that the open shop movement has reached a pinnacle where there seems to be no further need for continuous vigilance," William H. Barr, president National Founders Association, recently wrote to the *Detroit Saturday Night*, reiterating economic, political and social dangers of unionistic control of industry. Widespread circulation of the article from the office of the association, 29 South La Salle Street, Chicago, should serve to check any tendency toward complacency. The document so far as Detroit is concerned quite well anticipated the challenge made last week to organize the automobile shop trades.

What Industry Wants in the Graduate

AT recent meetings of the Mining and Metallurgical Engineers and the Steel Treaters there have been gatherings of men interested in metallurgical education. A large majority of those who attended the sessions devoted to this subject are actively engaged in teaching and doubtless this visible interest by college faculties is in part due to the investigation of engineering education now in progress under the direction of Mr. Wickenden. From the discussions one would gather that the uppermost question in educators' minds is, "What does industry want us to teach engineering students?"

A clew to the answer might be found in the audience which listens to these discussions. If the metallurgical industries were suffering from a lack of educated men, no doubt there would be a greater representation of industrialists at these conferences. No evident interest in the matter is equivalent to saying: "We have no constructive suggestions to offer; the average college graduate is good raw material."

As a matter of fact, are not the college authorities placing the wrong emphasis upon their industrial contacts? They should have learned by this time that a school of learning cannot produce specialists for industry. Each position is unique; only broad fundamentals are common to all. Hence this call upon the graduates and employers to consider details of the curriculum is only of passing significance. The colleges eventually will view the task primarily as the production of cultured citizens and secondarily as the production of high-salaried executives.

Some time back a committee was appointed by the American Institute of Mining and Metallurgical Engineers to canvass the situation and arrive at an answer to the question, "What does our industry look for in the college graduate?" Numerous prominent managers replied to the questionnaire. Their requirements of the technical subordinate were something like this: He must have integrity and loyalty. He must be clean and a good citizen; he must be energetic; he must be well grounded in the fundamentals of science. Not a word about special courses in mine timbering, flotation, steel refining, heat treatment. The answers are undoubtedly typical of those which would be given by any large employer in any line: the junior members must be men of character and ability.

College faculties will find, therefore, that the requirements of the industries are no different from the requirements of the professions, of the arts or of the State. All want men of character

and ability. Whenever a college is so managed that it builds these two attributes, it is fulfilling its mission admirably.

The live questions are not specialization in the courses of study so much as wide discretion in electives and numbers of "snap" courses; not so much what the XYZ Mfg. Co. thinks of the testing laboratory as what the attitude on the campus is toward cribbing in quizzes; not so much the success of the football team as an atmosphere which encourages work, study and clean living.

This does not mean that we advocate a return to the excessive Greek and Latin of a half century ago. Science, of course, is the foundation of all engineering curricula. Agricultural students will undoubtedly spend much time on plant and animal life, the architect will be more interested in external form, and the civil engineer will learn about the strength of materials. Such specialization is obvious. But a good undergraduate spirit, an inspired faculty and a president with vision are far more to be desired by industry than special courses leading to this, that or the other degree.

Workers and Easy Payments

INSTALMENT plan buying by the American people, which has grown to such proportions as to be a great economic factor, is causing some employers to consider the ultimate effect upon their workers. Those of them who have attempted an investigation have not been very successful in getting at facts. They know that instalment buying is going on freely among their employees. An occasional incident shows that some are incurring obligations which "mortgage their future" to a breaking point. An insistent instalment collector, trying to use the owner, asks him to prod an employee who is behind in his payments. Another collector tries to enter the plant to get at a delinquent debtor or hangs about the plant entrance. Inquiry is made at the office of the earning power of a prospective buyer. But it is rarely that an employer is able to get at the full facts. Experience has proved that a worker who is ridden by money troubles, nagged by creditors and compelled to stint his family in extricating himself from the dilemma, is not at all a desirable influence in a plant.

There has always been some annoyance from the financial troubles of employees. When a man gets into debt to tradesmen, landlord or doctor he may become involved in the law, with attempts at assignment of wages or writs tying up the money he earns. Such happenings inform the management of what is going on, and if the worker is a good man whose embarrassment is one of misfortune, he may get help in straightening out his affairs. The instalment plan transaction is not a sale but a lease. The seller retains ownership. The penalty of non-payment is the forfeiture of the goods and of the money already paid in. No attaching or trusteeing is necessary.

The automobile alone is not blamed, nor the radio set, nor those contrivances which make housekeeping easier. Whatever of evil exists seems to lie in the lure to general extravagance, in the home for things which it would be better to do without, in wearing apparel, personal adornment, motor cars out of proportion to earnings, and so on.

Industrial employers are of a mixed mind in the matter. Naturally they are not hunting for trouble and want no part in their employees' private affairs. They realize that there is well-considered instalment buying by families which are thrifty and live consistently within a budget. They know from statistics that savings banks deposits in the United States are increasing rapidly, coincident with the building up of hundreds of millions of what might be called the American family's floating debt. They know what is likely to happen when the next business depression comes along. From the standpoint of economics they are as puzzled as are the bankers, without whose support the instalment system would dwindle, since the bulk of the business is supported by the discounting of leases. Bank managements are keenly watchful as the workings of the plan unfold in industrial communities. Some thoughtful employers are studying the situation with a view to checking any harmful developments, preferably by education.

CORRESPONDENCE

Corrosion-Fatigue and Failure of Metals

To the Editor: The report of the Chicago convention of the American Society for Steel Treating in THE IRON AGE, Sept. 30, was interesting and unusually precise.

In the reference to my paper on "Corrosion-Fatigue of Metals," however, the emphasis given to the effect of non-metallic inclusions appears to me to be somewhat greater than is justified by the facts and discussion presented in the paper.

It is true that corrosion-fatigue cracks start at non-metallic inclusions. Such inclusions, therefore, are regions of weakness. No information, however, is available to show whether the weakening effect of the inclusions is great or small. It is quite possible that steel entirely free from inclusions would fail under corrosion-fatigue at stresses little greater than those that cause failure in ordinary steel. In the tapered form of endurance test specimen used at the Naval Experiment Station, the stress in the middle of the taper is only about 1.50 per cent greater than at the fillet. Yet this slight difference is sufficient to prevent fatigue failures at the fillet. The fact that steel fails at non-metallic inclusions, therefore, does not prove that the inclusions greatly decrease the corrosion-fatigue limit.

The path of a corrosion-fatigue crack, in passing from one inclusion to another, sometimes deviates and follows crystal boundaries. If inclusions were absent, therefore, corrosion-fatigue cracks might be entirely inter-crystalline.

Even in ordinary steel there is some evidence that under certain conditions corrosion-fatigue cracks may be inter-crystalline. It is possible that the tendency to inter-crystalline failure is greater at low-cycle frequency than at high-cycle frequency. With decrease in cycle frequency, the relative effect of the corrosion factor would increase and the relative effect of the fatigue factor would decrease. It is not surprising, therefore, that inter-crystalline failures of steam boilers have been reported.

D. J. MCADAM, JR.

Engineering Experiment Station, U. S. Naval Academy, Annapolis, Md., Sept. 30.

CELEBRATES BIRTHDAY

Judge Gary on Eightieth Anniversary Receives Notable Testimonials

Judge Elbert H. Gary celebrated his eightieth birthday, Friday, Oct. 8. He was as usual at his offices at 71 Broadway, New York, but relatively little was he able to do in his official capacity as chairman of the United States Steel Corporation. Instead soon after his arrival at his desk his attention was given up to a veritable flood of telegrams, letters and visits of felicitation. Notable among the testimonials were illuminated engrossed resolutions handsomely executed and bound received from the directors of the American Iron and Steel Institute, from a group of associations of German iron masters and from the directors of the United States Steel Corporation. The text of these resolutions follows:

Greeting from the Directors of The American Iron and Steel Institute

We, the Directors of the American Iron and Steel Institute, extend to you on this, your eightieth birthday anniversary, our sincere, affectionate congratulations and good wishes.

Since the creation of the institute, which was inspired by your efforts to stabilize the iron and steel industry at a time of great financial stress, you have been its wise, far seeing, able leader. Your vision, your wise counsel and your fearless stand for fair treatment and consideration of the rights of others have been of the greatest value to the industry, to our country during the Great War and to the American people.

May you be spared for many years, in health and vigor, to continue to guide us.

Sincerely,

C. M. Schwab	James A. Farrell	Thomas K. Glenn
Willis L. King	Jos. G. Butler, Jr.	Severn P. Ker
John A. Topping	W. H. Donner	Horace S. Wilkinson
E. A. S. Clarke	L. E. Block	Isaac M. Scott
William J. Filbert	James A. Burden	H. M. Hanna
Samuel Mather	Thomas Cantley	R. H. McMaster
J. F. Welborn	A. C. Dinkey	S. E. Hackett
J. A. Campbell	E. G. Grace	

Message from Germany

Honored Mr. Gary:

On the memorable day on which you celebrate in marvelous vigor the completion of eighty years of your life, the undersigned associations do not wish to be missing from the ranks of those who bring to this fine festivity the expression of their good wishes.

In proud satisfaction you can look back on a life rich in work and results. The iron industry of the United States of North America can thank primarily your forceful cooperation and your purposeful leadership for its development in recent years to a position of such powerful magnitude. You have succeeded in welding together into a mighty structure the United States Steel Corporation, the conduct of which has been in your able hands, and to lead it to marvellous accomplishment.

You have also devoted your great powers of work to the common good. Under your long continued leadership the American Iron and Steel Institute has greatly benefited the iron and steel business in general, scientifically, technically and practically, and marked out progress for it by new thoughts.

Your tireless efforts to improve the iron industry reach far beyond the borders of your great country. On many occasions you have pointed out the advisability and the significance of international cooperation, a goal that the German iron industry considers desirable and significant for the cooperation of peoples.

The undersigned associations wish to share in your festivities of today. May a kindly fate spare you a long and blessed evening of life.

Verein Deutscher Eisenhuttenleute.

Dr. Albert Vogler, Dortmund, general director.
Dr. Ing. Otto Peterson, Dusseldorf, managing director.

Verein Deutscher Eisen und Stahl Industrieller.

Dr. Ing. Paul Rousch, Oberhausen, chairman.
Dr. J. W. Reichert, managing director.

Stahlwerke Verband.

Dr. Fritz Thyssen, Hamborn.
Carl Gerwin, Dusseldorf-Oberkassel, director.

Appreciation of Steel Corporation Directors

At a regular meeting of the board of directors of the United States Steel Corporation held on Tuesday, Sept. 28, the following minute was unanimously adopted:

On Oct. 8, 1926, our chairman, Hon. Elbert H. Gary, will celebrate his eightieth birthday; he will also have continued as chairman for more than a quarter of a century, having held this important post since the date of the organization of the corporation on Feb. 25, 1901.

His great ability, his loyalty to the best interests of the corporation, his respect for the opinions of others, his kindness and tact, have won for him the respect, admiration and affection of his associates and subordinates; his patriotism, broadmindedness, integrity and desire for fair dealing have created for him an outstanding position in the hearts and minds of every right-thinking, self-respecting, loyal American, as well as his countless friends and admirers throughout the world.

To Elbert H. Gary, distinguished lawyer, wise business man, incomparable leader, on this occasion, we offer our sincere congratulations and express the earnest hope that he may continue among us for many years to come.

Judge Gary was in a particularly happy frame of mind. In response to their request he received a large group of newspaper and magazine writers and for two hours answered a wide variety of questions, largely of a highly personal nature, such as his daily routine of eating, reading and the like. It was not until the questions lagged that the gathering spontaneously broke up. In the course of the informal conversations, he said that one outstanding development during his business career was the improvement in the moral tone of the people, especially in business. In referring to the testimonials quoted above, he pointed out that unethical practices are not likely but can be inquired about when they affect the signers of documents covering lofty sentiments put into writing, especially of an indelible character for perpetual keeping. He delivered himself of the dictum that neither beer nor wine is of any real benefit, in replying to a question as to the effect of prohibition on the efficiency of labor, though he admitted that he would not have gone so far as to include beer and wines in the prohibition law.

Metals Utilization Committee Asks Help of Trade Bodies

WASHINGTON, Oct. 11.—The National Committee on Metals Utilization in a statement explains that the work of the committee can thrive best if based upon close cooperation with trade associations in the metal-using industries. The immediate goal is to have the trade associations set up their own committees to study the problem of waste elimination, reconcile their point of view with the general situation and furnish to the office of the committee in the Department of Commerce, Washington, suggestions and recommendations which will facilitate the coordination of all elements in applying corrective measures.

In making a survey of trade associations in order to learn what groups were interested in simplification and standardization and how the committee could be of assistance, the committee sent out 209 letters and has received 52 replies.

"High Temperature Insulation" is the subject of a booklet published by the Celite Products Co., 1320 South Hope Street, Los Angeles, Cal., being a copy of a lecture on the subject which has been compiled by this company and which is being used by the mechanical engineering departments of a number of universities this year. The lecture goes into the subject of heat losses in general, methods of determining heat losses through walls and applications of high temperature insulating materials. Copies of the booklet are available to those interested.

The Alabama By-Products Corporation, Birmingham, will add 49 Koppers ovens to its present 100-oven by-product coke plant.

Iron and Steel Markets

Less Steel for Automobile Plants

Detroit Curtailment Due in Part to Western Floods— Some Lessening in Implement Demand Also— A Week of Large Rail Orders

THUS far October developments indicate no marked departure this month from the September pace. Last month's decline of 1.8 per cent from the August rate of steel ingot output is unimportant, and the increase of 51,000 tons in the Steel Corporation's unfilled orders is known to be due to rail orders on which rollings will be small for some weeks.

The feature of the week's news to which more attention will be given than to either of these statistical statements is the lessened demand from automobile companies for sheets and other steel products in view of reduced operating schedules of important Detroit makers.

More than the usual seasonal curtailment is reported at these plants, in view of lessened sales due to continued heavy rains and to damage from western floods. Demand for steel from implement manufacturers has been affected by the same causes.

Pittsburgh steel producers, whose business is in the general run of products apart from rails, find incoming new orders, as distinguished from specifications, slightly less than last month's. This may cause some stocking of product or a shortening of rolling mill schedules in two or three lines.

Chicago reports of rail contracts exceeding 200,000 tons added to the Pennsylvania Railroad award of 160,000 tons make a noteworthy week in railroad steel. The St. Paul took 40,000 tons, the Illinois Central 66,000 tons and the Union Pacific 23,000 tons, while the quota of the Santa Fe, in which the Colorado mill shares largely, is put at more than 125,000 tons.

Of the Pennsylvania Railroad's 160,000 tons of 130-lb. rails, the Bethlehem Steel Corporation was awarded 70,000 tons, the Illinois Steel Co. 50,000 tons, the Carnegie Steel Co. 30,000 tons, and the Inland Steel Co. 10,000 tons.

That pipe mills will hold to their high rate of operations appears from further good bookings of line pipe. The Associated Petroleum Producers of Mexico have placed 160 miles of 12¾-in. pipe for a line through the Rio Grande Valley to Brownsville. Another inquiry calls for 115 miles of 2-in., 3-in., 4-in. and 6-in. pipe for Oklahoma.

The soaring market for pig tin points to sustained prices for tin plate at a time when seasonal influences are causing some slowing down in production at independent plants.

Although a falling off in building construction is indicated by some reports, structural steel lettings of the past week held up to 30,000 tons. Bids have been asked on 11,500 tons for New York subways and 10,000 tons or more for a convention hall at Atlantic City, N. J.

Expanding uses for sheets are reflected in the liberal scale of shipments, aside from the automobile industry. At the same time it is suggested that the present rate of operations means stocking by some mills, a procedure that caused an oversupply in the late months of 1925.

The anti-dumping unit of the Treasury Department is sending a questionnaire to Atlantic seaboard producers of pig iron to learn what injury, if any, they had suffered by alleged dumping of German pig iron in this country. The answers are expected to give results of detailed inquiries in Germany by American investigators.

An Eastern plate manufacturer bought 15,000 tons of basic pig iron for November-December shipment, on which the low price is reported at $20.50. The advance of 50c. a ton recently announced by some eastern Pennsylvania furnaces on foundry iron has not been effective on the larger transactions of the past week. Decreasing melt of pig iron is reported by some of the jobbing foundries and cast iron pipe makers of the East.

At the same time, it is pointed out, merchant pig iron output is slightly less, the gain in the September pig iron rate being entirely in steel works iron.

With the continued British demand for American coal, coke commands stiff prices, which in turn help pig iron producers in the Central West in their stand for an advance. Labor is not plentiful and some Connellsville operators have had to pay $6 for day labor, as against the $5 rate in non-union fields.

German steel rails have evidently been singled out among finished steel products to receive an export bounty, according to the findings of the German-American commission of inquiry into alleged German dumping. The bounty, claimed to be temporary, is regarded as automatically ceasing with the establishment of the European steel syndicate.

British finished steel makers, in the face of active inquiries and uncertain resumption of production, are asking up to 30s. (over $7.25) per ton increase in prices. Yet an English company has secured a contract for 10,000 tons of cast iron pipe for Cairo.

Supported by the three leading political parties, as well as steel companies and business generally, plans are being laid in Japan for a steel selling syndicate as a step toward nationalization of the Japanese steel industry.

THE IRON AGE composite price for pig iron has advanced from $19.63 to $19.71 per gross ton, higher prices for Buffalo iron being obtained. The composite steel price is also higher, reaching the January level of 2.453c. per lb., which was the high point of the year. The rise from 2.439c. last week is due to a net change in the price of No. 28 gage sheets, the new extras on the present No. 24 gage basis having become well established.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At Date, One Week, One Month, and One Year Previous

For Early Delivery

Pig Iron, Per Gross Ton:	Oct. 11, 1926	Oct. 5, 1926	Sept. 14, 1926	Oct. 13, 1925
No. 2 fdry., Philadelphia	$21.76	$21.76	$21.76	$21.76
No. 2, Valley furnace	18.50	18.50	17.50	19.00
No. 2, Southern, Cin'ti	23.69	23.69	24.19	23.05
No. 2, Birmingham, Ala.	20.00	20.00	21.00	19.00
No. 2 foundry, Chicago*	21.00	21.00	21.00	21.50
Basic, del'd, eastern Pa.	*20.50*	20.75	20.75	21.00
Basic, Valley furnace	18.00	18.00	17.50	18.50
Valley Bessemer del'd P'gh	20.76	20.76	19.76	21.26
Malleable, Chicago*	21.00	21.00	21.00	21.50
Malleable, Valley	18.50	18.50	17.50	19.00
Gray forge, Pittsburgh	19.76	19.76	18.76	20.26
L. S. charcoal, Chicago	27.04	27.04	29.04	29.04
Ferromanganese, furnace	88.00	88.00	88.00	115.00
Rails, Billets, etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Light rails at mill	36.00	36.00	33.00	36.96
Bess. billets, Pittsburgh	35.00	35.00	35.00	35.00
O.-h. billets, Pittsburgh	35.00	35.00	35.00	35.00
O.-h. sheet bars, P'gh	36.00	36.00	36.00	35.00
Forging billets, base, P'gh	40.00	40.00	40.00	40.00
O.-h. billets, Phila	40.30	40.30	40.30	39.30
Wire rods, Pittsburgh	45.00	45.00	45.00	45.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	1.90	1.90	1.90	1.90
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.22	2.22	2.22	2.12
Iron bars, Chicago	2.00	2.00	2.00	1.90
Steel bars, Pittsburgh	2.00	2.00	2.00	2.00
Steel bars, Chicago	2.10	2.10	2.10	2.10
Steel bars, New York	2.34	2.34	2.34	2.34
Tank plates, Pittsburgh	1.90	1.90	1.90	1.80
Tank plates, Chicago	2.10	2.10	2.10	2.10
Tank plates, New York	2.24	2.24	2.24	2.04
Beams, Pittsburgh	2.00	2.00	2.00	1.90
Beams, Chicago	2.10	2.10	2.10	2.10
Beams, New York	2.34	2.34	2.34	2.24
Steel hoops, Pittsburgh	2.50	2.50	2.50	2.40

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

Sheets, Nails and Wire,	Oct. 11, 1926	Oct. 5, 1926	Sept. 14, 1926	Oct. 13, 1925
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 24, P'gh	3.00	3.00	3.00	2.95
Sheets, black, No. 24, Chicago dist. mill	**3.20**	3.10	3.10	3.15
Sheets, galv., No. 24, P'gh	3.85	3.85	3.85	3.75
Sheets, galv., No. 24, Chicago dist. mill	**4.05**	3.95	3.95	3.90
Sheets, blue, 9 & 10, P'gh	2.30	2.30	2.30	2.25
Sheets, blue, 9 & 10, Chicago dist. mill	**2.50**	2.40	2.40	2.40
Wire nails, Pittsburgh	2.65	2.65	2.65	2.60
Wire nails, Chicago dist. mill	2.70	2.70	2.70	2.70
Plain wire, Pittsburgh	2.50	2.50	2.50	2.50
Plain wire, Chicago dist. mill	2.55	2.55	2.55	2.55
Barbed wire, galv., P'gh	3.35	3.35	3.35	3.35
Barbed wire, galv., Chicago dist. mill	3.40	3.40	3.40	3.40
Tin plate, 100 lb. box, P'gh	$5.50	$5.50	$5.50	$5.50
Old Material, Per Gross Ton:				
Carwheels, Chicago	$14.50	$14.50	$15.25	$17.00
Carwheels, Philadelphia	*17.00*	17.50	17.50	18.50
Heavy melting steel, P'gh	17.00	17.00	18.00	18.50
Heavy melting steel, Phila.	16.50	16.50	17.00	16.50
Heavy melting steel, Ch'go	13.00	13.00	14.25	16.00
No. 1 cast, Pittsburgh	16.00	16.00	16.50	17.00
No. 1 cast, Philadelphia	17.50	17.50	18.00	18.00
No. 1 cast, Ch'go (net ton)	16.50	16.50	17.00	17.50
No. 1 RR. wrot., Phila.	17.00	17.00	17.50	18.00
No. 1 RR. wrot. Ch'go (net)	*12.75*	13.00	13.50	14.00
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	$3.50	$3.50	$3.25	$5.00
Foundry coke, prompt	4.50	4.50	4.25	5.00
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	*14.25*	14.37½	14.50	14.62½
Electrolytic copper, refinery	*13.87½*	14.00	14.07½	14.37½
Zinc, St. Louis	*7.32½*	7.35	7.47½	8.20
Zinc, New York	*7.67½*	7.70	7.82½	8.55
Lead, St. Louis	*8.80*	8.35	8.50	9.25
Lead, New York	*8.50*	8.65	8.75	9.50
Tin (Straits), New York	*70.50*	71.50	68.87½	62.12½
Antimony (Asiatic), N. Y.	**14.75**	13.62½	16.25	17.00

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Pittsburgh

Decline in Automobile Output and Unfavorable Agricultural Situation Cloud Outlook

PITTSBURGH, Oct. 11.—Ingot production in this and nearby districts holds at a gait of about 85 per cent of capacity, but the prospect for a maintenance of this rate of output to the end of the month is dimmed by the fairly general recession in automobile production schedules and the fact that very low prices for cotton and the damage done by floods in the Western grain States already are having some effect upon the demand for steel from the agricultural implement manufacturers.

There is a well-sustained demand for lap-welded pipe and a gain in the amount of steel being placed for railroad work, but taking incoming business as a whole, it is less than it was last month and hardly equal to shipments. There seems to be only one of two courses immediately ahead for steel manufacturers: either they will curtail production or, keeping it up, will be obliged to put some in stock. The latter course seems to be in vogue among sheet manufacturers, as there is at present an engagement of 90 per cent of sheet mill capacity when a materially lower rate of output would suffice to meet the present demand, which is not urgent. Conservative sheet manufacturers regard production as too high, probably recalling that a year ago operations at the present rate resulted in an oversupply, which directly led to the price break in the early part of this year.

Makers of plates, shapes and bars still are holding firmly to the prices they set out to obtain for the last quarter of the year, notwithstanding that this has made the large buyers very conservative and has resulted in very much less than the usual amount of quarterly contracting. It is possible that steel manufacturers did not expect there would be as much contracting this quarter as there was in the three preceding and preferred a profitable price, even if it meant smaller individual sales and a further shortening in operating schedules. Sheet makers in this territory say that they are booking business in the common finishes at the recent advance in prices, and this would not be possible if lower prices were at all common.

The price of those classes of steel finding their largest outlet to the automotive industry reflect to some extent the falling off in demand from that source. There is a good deal of firmness to pipe prices, and the continued strength of the pig tin market suggests that tin plate may possibly advance.

With the British coal strike still unsettled and the export demand for coal exerting considerable influence on the prices of coal, coke continues to command stiff prices, and this encourages pig iron producers to take a strong price stand. Not much activity is noted in the scrap market, and prices generally are inclined downward, although really good heavy melting steel does not seem to be at all plentiful. If there were a demand for a sizable lot, it is probable that more than current quotations, based on sales of small lots, would have to be paid.

Pig Iron.—The market here is holding firm, but it is because of the strong coke market rather than a good demand. Large consumers of the various grades are fairly well covered until the end of the year, and such

demands as are now reaching the market are entirely from the small-lot consumers, who usually do not buy very far ahead of their requirements. The British coal strike, however, is creating a situation that may have a bearing on the cost of coke even to those blast furnace operators who are covered to the end of the year at prices well below those now prevailing. The demand for coal for export is still strong and is bringing out prices high enough to encourage increased output. With labor rather scarce, many of the mine and oven operators find it difficult to secure men except at an advance over the ruling scale of wages in the non-union fields. The rate in these fields is the November 1917 scale, or $5 a day for day labor, but in getting additional men, operators have found it necessary to pay $6 a day, or to offer inducements amounting to that much. There is a clause in all coke contracts which puts the burden on the buyer of any advance in wages during the term of the contract. It is this feature that makes merchant producers of pig iron indifferent to new business at less than the prices they recently named.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

Basic	$18.00
Bessemer	19.00
Gray forge	19.00
No. 2 foundry	18.50
No. 3 foundry	18.00
Malleable	18.50
Low phosphorus, copper free	$27.50 to 28.00

Ferroalloys.—There is good specifying against contracts for ferromanganese, spiegeleisen and high grade ferrosilicon, but new demands are few and small, because important consumers generally are covered to the end of the year. Prices are unchanged and without trend.

Semi-Finished Steel.—A high rate of operation of sheet and tin mills is reflected in good specifications against contracts for sheet bars, but there is no open market activity worth noting. Specifications for billets and slabs are running below the usual quotas; strip makers are busy enough on orders taken for shipment this month, but incoming business suggests a lighter run next month. Prices are well maintained. They are given on page 1097.

Steel and Iron Bars.—Mills in this and nearby districts are holding to 2c., base Pittsburgh, for steel bars in large lots and are getting 2.10c., base, on car lots. No very sizable tonnages are moving at 2c., because that price can be done on lots as small as 200 to 300 tons and larger users still believe they are entitled to a preferential price. Not getting it, they are taking only their actual early requirements. Demand for iron bars is somewhat better but not good. Refined iron bars still are quoted at 3c., base Pittsburgh, but that is strictly a small lot price.

Structural Steel.—The mills continue their efforts to establish 2c., base Pittsburgh, as the minimum on large structural shapes and are indifferent to lower offers. Fabricating companies in the district have good coverage against the work on their books, and with new business on a tapering scale, their new requirements accordingly are lighter. Formal fourth quarter contracts have been few and small, but the mills appear to prefer current shipment business in small lots at their own prices than more extended business at lower figures.

Plates.—Buyers seem to have been successful in their effort to secure tonnages at less than 1.90c., base Pittsburgh. There is far from full engagement of plate-making capacity, despite some good demands for pipe, barges, tanks and lately for railroad cars. There are no manufacturers in this area, however, who roll plates exclusively and the market is still too good in other products for them to press sales of plates at prices that are said to be at or close to producing costs.

Wire Products.—Demand is still based strictly on actual requirements, but it is very constant, due to the policy of jobbers and manufacturing consumers of keeping down their inventories. Woven wire fence is rather slow. The great bulk of that product goes to consumers in the agricultural districts north of the Mason and Dixon line, and the heavy rains and floods in the Central Western States have practically stopped fence-building in that area. Prices are steady.

Rails and Track Supplies.—No business of consequence is yet reaching the mills in standard-section rails and track accessories, but the expectation is common that some large orders will be placed in the next 30 days. Current demands for standard spikes, tie plates and track bolts are fairly large, and there continues to be a good call for small spikes, and light-section rails are moving better as a result of increased coal mine operations. Prices are given on page 1095.

Tubular Goods.—The market continues good in lap-welded pipe, and while delivery promises are shortening in some sizes, the prospect for a continued high rate of mill operation has been brightened by additional line pipe business. The Associated Petroleum Producers of Mexico have placed 160 miles of 12¾-in. pipe for a gas line to run from Jim Hogg County, Texas, through the Rio Grande Valley to Brownsville. Another inquiry coming from an oil country jobber calls for 115 miles of 2-in., 3-in., 4-in. and 6-in. line pipe for shipment to Oklahoma. The market for standard-weight pipe is fairly active, but makers are having no trouble in making prompt shipments. Mill prices are steady, and the secondary market is less irregular than it was at this time last year. Demand for boiler tubes does not tax the capacity of makers. Mechanical tubing is still moving well to the automobile companies. Discounts are given on page 1095.

Cold-Finished Steel Bars and Shafting.—There is a demand sufficient to provide an engagement of only about 60 per cent of the finishing capacity. It would be unusual if such a condition did not produce some anxiety for orders and irregularity in prices. There is some business in the ordinary tonnages at 2.50c., base Pittsburgh, but 2.40c. is more common on such tonnages than it has been.

THE IRON AGE Composite Prices

Finished Steel

Oct. 11, 1926, 2.453c. Per Lb.

One week ago	2.439c.
One month ago	2.439c.
One year ago	2.403c.
10-year pre-war average	1.689c.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 87 per cent of the United States output of finished steel.

	High		Low	
1926	2.453c.,	Jan. 5;	2.403c.,	May 18
1925	2.560c.,	Jan. 6;	2.396c.,	Aug. 18
1924	2.789c.,	Jan. 15;	2.460c.,	Oct. 14
1923	2.824c.,	April 24;	2.446c.,	Jan. 2

Pig Iron

Oct. 11, 1926, $19.71 Per Gross Ton

One week ago	$19.63
One month ago	19.46
One year ago	19.79
10-year pre-war average	15.72

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

	High		Low	
1926	$21.54,	Jan. 5;	$19.46,	July 13
1925	22.50,	Jan. 13;	18.96,	July 7
1924	22.88,	Feb. 26;	19.21,	Nov. 3
1923	30.86,	March 20;	20.77,	Nov. 20

Mill Prices of Finished Iron and Steel Products

Iron and Steel Bars

Soft Steel

	Base Per Lb.
F.o.b. Pittsburgh mills	2.00c. to 2.10c.
F.o.b. Chicago	2.10c.
Del'd Philadelphia	2.32c.
Del'd New York	2.34c.
Del'd Cleveland	2.19c.
F.o.b. Birmingham	2.15c. to 2.25c.
C.i.f. Pacific ports	2.35c.
F.o.b. San Francisco mills	2.35c. to 2.40c.

Billet Steel Reinforcing

F.o.b. Pittsburgh mills	2.00c. to 2.10c.

Rail Steel

F.o.b. mill	1.80c. to 1.90c.
F.o.b. Chicago	2.00c.

Iron

Common iron, f.o.b. Chicago	2.00c.
Refined iron, f.o.b. P'gh mills	3.00c.
Common iron, del'd Philadelphia	2.22c.
Common iron, del'd New York	2.24c.

Tank Plates

	Base Per Lb.
F.o.b. Pittsburgh mill	1.90c.
F.o.b. Chicago	2.10c.
F.o.b. Birmingham	2.05c. to 2.15c.
Del'd Cleveland	2.09c.
Del'd Philadelphia	2.22c.
Del'd New York	2.24c.
C.i.f. Pacific ports	2.30c.

Structural Shapes

	Base Per Lb.
F.o.b. Pittsburgh mill	2.00c. to 2.10c.
F.o.b. Chicago	2.10c.
F.o.b. Birmingham	2.15c. to 2.25c.
Del'd Cleveland	2.19c.
Del'd Philadelphia	2.22c. to 2.32c.
Del'd New York	2.34c.
C.i.f. Pacific ports	2.35c.

Hot-Rolled Flats (Hoops, Bands and Strips)

	Base Per Lb.
All gages, narrower than 6 in., P'gh	2.50c.
All gages, 6 in. and wider, P'gh	2.30c.
All gages, 6 in. and narrower, Chicago	2.60c.
All gages, wider than 6 in., Chicago	2.50c.
Cotton ties, f.o.b. Atlantic ports, per bundle of 45 lb.	$1.22
Cotton ties, f.o.b. Gulf ports, per bundle of 45 lb.	1.20

Cold-Finished Steel

	Base Per Lb.
Bars, f.o.b. Pittsburgh mills	2.30c. to 2.50c.
Bars, f.o.b. Chicago	2.40c. to 2.50c.
Bars, Cleveland	2.45c. to 2.55c.
Shafting, ground, f.o.b. mill	*2.70c. to 3.00c.
Strips, f.o.b. Pittsburgh mills	3.25c. to 3.60c.
Strips, f.o.b. Cleveland mills	3.25c. to 3.50c.
Strips, delivered Chicago	3.55c. to 3.90c.
Strips, f.o.b. Worcester mills	3.75c.

*According to size.

Wire Products

(To jobbers in car lots, f.o.b. Pittsburgh and Cleveland)

	Base per Keg
Wire nails	$2.65
Galv'd nails, 1-in. and longer	4.65
Galv'd nails, shorter than 1-in.	4.90
Galvanized staples	3.35
Polished staples	3.10
*Cement coated nails	2.65

*Subject to new card of extras dated Sept. 1, 1926.

	Base Per 100 Lb.
Bright plain wire, No. 9 gage	$2.50
Annealed fence wire	2.65
Spring wire	3.50
Galv'd wire, No. 9	3.10
Barbed wire, galv'd	3.35
Barbed wire, painted	3.10

Chicago district mill and delivered Chicago prices are $1 per ton above the foregoing. Birmingham mill prices $3 a ton higher; Worcester, Mass., mill $3 a ton higher on production of that plant; Duluth, Minn., mill $2 a ton higher; Anderson, Ind., $1 higher.

Woven Wire Fence

	Base to Retailers Per Net Ton
F.o.b. Pittsburgh	$65.80
F.o.b. Cleveland	65.00
F.o.b. Anderson, Ind.	66.00
F.o.b. Chicago district mills	67.00
F.o.b. Duluth	68.00
F.o.b. Birmingham	68.00

Sheets

Blue Annealed

	Base Per Lb.
Nos. 9 and 10, f.o.b. Pittsburgh	2.30c. to 2.40c.
No. 9 and 10, f.o.b. Ch'go dist. mill	2.50c.
Nos. 9 and 10, del'd Philadelphia	2.62c. to 2.72c.
Nos. 9 and 10, f.o.b. Birmingham	2.60c. to 2.70c.

Box Annealed, One Pass Cold Rolled

No. 24, f.o.b. Pittsburgh	3.00c. to 3.10c.
No. 24, f.o.b. Ch'go dist. mill	3.20c.
No. 24, del'd Philadelphia	3.32c. to 3.42c.
No. 24, f.o.b. Birmingham	3.30c. to 340c.

Metal Furniture Sheets

No. 24, f.o.b. Pittsburgh, A grade	4.25c.
No. 24, f.o.b. Pittsburgh, B grade	4.10c.

Galvanized

No. 24, f.o.b. Pittsburgh	3.35c. to 3.95c.
No. 24, f.o.b. Chicago dist. mill	4.05c.
No. 24, del'd Philadelphia	4.17c. to 4.32c.
No. 24, f.o.b. Birmingham	4.15c. to 4.25c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh	3.15c. to 3.25c.
No. 28, f.o.b. Chicago dist. mill	3.25c. to 3.35c.

Automobile Body Sheets

No. 20, f.o.b. Pittsburgh	4.25c.

Long Ternes

No. 28, 8-lb. coating, f.o.b. mill	4.65c.

Tin Plate

	Per Base Box
Standard cokes, f.o.b. P'gh district mills	$5.50
Standard cokes, f.o.b. Gary and Elwood, Ind.	5.60

Terne Plate

(*F.o.b. Morgantown or Pittsburgh*)

(Per package, 20 x 28 in.)

8-lb. coating, 100 lb. base	$11.40
8-lb. coating I.C.	11.70
15-lb. coating I.C.	14.85
20-lb. coating I.C.	$16.20
25-lb. coating I.C.	17.90
30-lb. coating I.C.	19.45
40-lb. coating I.C.	21.65

Alloy Steel Bars

(F.o.b. Pittsburgh or Chicago)

S. A. E. Series Numbers		Base Per 100 Lb.
2100*	(1½% Nickel, 0.10% to 0.20% Carbon)	$3.20 to $3.25
2300	(3½% Nickel)	4.35 to 4.50
2500	(5% Nickel)	5.50 to 5.65
3100	(Nickel Chromium)	3.40 to 3.50
3200	(Nickel Chromium)	5.00 to 5.25
3300	(Nickel Chromium)	7.00 to 7.25
3400	(Nickel Chromium)	6.25 to 6.50
5100	(Chromium Steel)	3.40 to 3.50
5200*	(Chromium Steel)	7.00 to 7.50
6100	(Chrom. Vanadium bars)	4.30
6100	(Chrom. Vanad. spring steel)	3.80
9250	(Silicon Manganese spring steel)	3.20 to 3.25
	Carbon Vanadium (0.45% to 0.55% Carbon, 0.15% Vanad.)	4.10 to 4.20
	Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chrom., 0.15 Vanad.)	4.30
	Chromium Molybdenum bars (0.80—1.10 Chrom., 0.25—0.40 Molyb.)	4.25 to 4.35
	Chromium Molybdenum bars (0.50—0.70 Chrom., 0.15—0.25 Molyb.)	3.40 to 3.50
	Chromium Molybdenum spring steel (1—1.25 Chrom., 0.30—0.50 Molybdenum)	4.50 to 4.75

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2½-in. squares, the price is $5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

Rails

	Per Gross Ton
Standard, f.o.b. mill	$43.00
Light (from billets), f.o.b. mill	36.00
Light (from rail steel), f.o.b. mill	32.00 to 34.00
Light (from billets), f.o.b. Ch'go mill	36.00 to 38.00

Track Equipment

(F.o.b. Mill)

	Base Per 100 Lb.
Spikes, ⅜ in. and larger	$2.80 to $3.00
Spikes, ⅜ in. and smaller	2.90 to 3.25
Spikes, boat and barge	3.25
Track bolts, all sizes	3.90 to 4.50
Tie plates, steel	2.25 to 2.35
Angle bars	2.75

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld

Steel: Inches	Black	Galv.	Iron: Inches	Black	Galv.
⅛	45	19½	⅛ to ⅜	+11	+30
¼ to ⅜	51	25½	½	22	3
½	56	42½	¾	28	11
¾	60	48½	1 to 1¼	30	13
1 to 3	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6	59	47½	2½	26	11
7 and 8	56	43½	3 to 6	23	13
9 and 10	54	41½	7 to 12	26	11
11 and 12	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	⅛ to ⅜	+19	+54
¼ to ⅜	47	30½	½	21	7
½	53	42½	¾	28	13
¾	58	47½	1 to 1¼	30	14
1 to 1½	60	49½			
2 to 3	61	50½			

Lap Weld, extra strong, plain ends

2	55	42½	2	23	9
2½ to 4	57	46½	2½ to 4	29	15
4½ to 6	56	45½	4½ to 6	28	14
7 to 8	52	39½	7 to 8	21	7
9 and 10	45	32½	9 to 12	16	2
11 and 12	44	31½			

To the large jobbing trade the above discounts on steel pipe are increased on black by one point, with supplementary discount of 5%, and on galvanized by 1½ points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to large jobbers by one point with supplementary discounts of 5 and 2½%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Lap Welded Steel		*Charcoal Iron*	
2 to 2½ in.	27	1½ in.	+18
2½ to 2¾ in.	37	1¾ to 1½ in.	+ 8
3 in.	40	2 to 2¼ in.	— 2
3¼ to 3¾ in.	42½	2½ to 3 in.	— 7
4 to 13 in.	46	3½ to 4½ in.	— 9

Beyond the above discounts, 5 to 7 fives extra are given on lap welded steel tubes and 2 tens to 2 tens and 1 five on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes

Cold Drawn

1 in.	49	3 in.	45
1¼ to 1½ in.	52	3½ to 3½ in.	47
1¾ in.	36	4 in.	50
2 to 2¼ in.	31	4½, 5 and 6 in.	46
2½ to 2¾ in.	39		

Hot Rolled

2 and 2¼ in.	54	3½ and 3½ in.	50
2½ and 2¾ in.	42	4 in.	53
3 in.	48	4½, 5 and 6 in.	48

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

	Per Cent Off List
Carbon, 0.10% to 0.30%, base	55
Carbon, 0.30% to 0.40%, base	50

Plus differentials for lengths over 18 ft. and for commercially exact lengths. Warehouse discounts on small lots are less than the above.

Sheets.—Sales are being made at the prices recently announced by a majority of the mills. Moreover, they are in rather surprisingly good volume in view of the common expectation that a quiet period was ahead due to the fact that buyers were so heavily covered prior to the advance. There has been a notable gain in specifications lately against railroad car work, embracing both blue annealed and galvanized sheets. The demand for automobile body sheets has decreased further in the past week. Some of the General Motors Corporation subsidiaries and one or two of the other manufacturers are still maintaining production at a higher rate, but most of the companies are steadily reducing schedules, and body sheets stand out as the quietest line not only in the sheet market but the steel market as a whole. In the common finishes sheet makers have order books sufficient to carry them through almost to the end of the year, but there is no such urgency to the demand as to warrant the present rate of production, which is in excess of 90 per cent of capacity. Already the fear is expressed that production may be overdone during the remainder of this year, as it was last year to the detriment of prices.

Tin Plate.—The market in this product is seasonal. There is not much new business, and the mills are merely working out old orders. The leading producer is still operating at 92 per cent of capacity, but among independent companies the rate is considerably lower and is due for a further decrease, as there has been more or less advancing of orders originally booked for November rolling. There is nothing new as to prices, except for the possibility suggested by the continued strength of pig tin.

Hot-Rolled Flats.—The slowing down of the automobile industry is telling on demand, and with incoming business falling behind shipments, some slowing down in mill operations is likely between now and the end of the month. Prices are holding well, however.

Cold-Rolled Strips.—There is no betterment in the price situation because the demand for this product, like others going principally to the automotive industry, is affected by the smaller requirements of that industry. Locally and over most of the Eastern half of the country small lots are still bringing 3.50c. to 3.60c., base Pittsburgh or Cleveland, but in the Detroit area where the tonnages ordinarily run large and competition is usually strong, the ruling price is 3.25c., base.

Bolts, Nuts and Rivets.—Business in bolts and nuts so far this month has fallen somewhat behind that of the same period last month, but most makers are matching production with demand and are still observing the discounts originally named two years ago. There is, however, some quoting of the carload discounts on less-than-carload lots to buyers whose business is regarded as desirable. Rivets are moving fairly well and on contracts $2.60, base, per 100 lb., Pittsburgh, is the ruling quotation.

Coke and Coal.—Spot coke remains quotable at the prices of a week ago, although there has been some increase in the offerings by small producers without regular consuming connections. It is possible to secure lots of 10 to 15 carloads of spot furnace coke at $3.50 per net ton at ovens fairly easily, but consumers desiring larger tonnages of well-established brands do not find them readily obtainable at much below $3.75. The coke market derives most of its strength from the coal market, which is still governed by the export demand occasioned by the continuance of the British coal strike. It is much more profitable to sell coal at today's prices than coke. There is little doubt that without the export demands for coal there would be an ample supply for all domestic needs. A materially higher level seems likely, if the export demand continues, but a sudden termination of the British strike would have a reverse effect. Coal buyers have been rather cautious in their purchases to date, and stocking of coal against winter requirements as a whole has been moderate. The ending of Lake shipping season in about a month will release a good deal of coal for other markets and will probably produce an easier situation regardless of when the British strike ends.

Old Material.—Prices are holding substantially at the levels of a week ago, with the market, however, showing a somewhat stronger tone. Dealers seem to be expecting a buying movement in the next 30 days, and those who recently sold the Weirton Steel Co. 20,000 tons of heavy melting steel, compressed sheets and bundled sheet sides and ends are offering prices so close to what they obtained as to indicate they were again building up tonnages. There does not seem to be any too much No. 1 railroad heavy melting steel, or its equivalent, on the market at present prices. That grade in the Pennsylvania Railroad October list brought about $18, or about 50c. a ton over the present market but 25c. a ton under what was obtained a month ago. Malleable scrap is weaker. The Norfolk & Western October scrap list contains 3907 gross tons.

We quote for delivery to consumers' yards in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

	Per Gross Ton
Heavy melting steel	$17.00 to $17.50
Scrap rails	16.25 to 16.75
No. 1 cast, cupola size	16.00 to 16.50
Compressed sheet steel	15.50 to 16.00
Bundled sheets, sides and ends	14.50 to 15.00
Railroad knuckles and couplers	18.50 to 19.00
Railroad coil and leaf springs	18.50 to 19.00
Low phosphorus blooms and billet ends	20.50 to 21.00
Low phosphorus mill plates	20.00 to 20.50
Low phosphorus, light grade	17.50 to 18.00
Low phosphorus punchings	18.50 to 19.00
Steel car axles	21.50 to 22.00
Cast iron wheels	16.00 to 16.50
Rolled steel wheels	18.50 to 19.00
Machine shop turnings	12.00 to 12.50
Short shoveling steel turnings	13.50 to 14.00
Sheet bar crops	17.50 to 18.00
Heavy steel axle turnings	15.00 to 15.50
Short mixed borings and turnings	12.25 to 12.75
Heavy breakable cast	15.50 to 16.00
Cast iron borings	12.25 to 12.75
No. 1 railroad wrought	13.00 to 13.50
No. 2 railroad wrought	17.00 to 17.50
Railroad or automobile malleable scrap	16.50 to 17.00

Warehouse Prices, f.o.b. Pittsburgh

	Base per Lb.
Tank plates	3.00c.
Structural shapes	3.00c.
Soft steel bars and small shapes	2.90c.
Reinforcing steel bars	2.90c.
Black sheets (No. 24 gage), 25 or more bundles	3.95c.
Galvanized sheets (No. 24 gage), 25 or more bundles	4.70c.
Blue annealed sheets (No. 10 gage), 25 or more sheets	3.40c.
Cold-finished shafting and screw stock—	
Rounds and hexagons	3.60c.
Squares and flats	4.10c.
Bands	3.60c.
Spikes, large	3.30c.
Small	3.80c. to 5.25c.
Boat	3.80c.
Bolts, track	4.90c.
Wire, black soft annealed, base per 100 lb.	$3.00
Wire, galvanized soft, base per 100 lb.	3.00
Common wire nails, per keg	3.00
Cement coated nails, per keg	3.05

The air supply for the furnace of the Mystic Iron Works at Everett, Mass., which was blown in Sept. 27, is furnished by the new type of General Electric blast furnace blower. Two 45,000-cu. ft. units have been installed as part of the furnace equipment, the units being duplicates, one to be permanently in service and the other to be reserved as a spare. Each of the two blower units consists of a 3-stage, water-jacketed blower with radial flow impellers rated to deliver any volume up to 45,000 cu. ft. of air at pressures up to 30 lb. The drivers are 8-stage, condensing, General Electric turbines with multiple valve control.

An international engineering congress for the science of management will be held in Milan, Italy, September, 1927. The American Management Association, the National Association of Cost Accountants, the Society of Industrial Engineers, the Taylor Society and the management division of the American Society of Mechanical Engineers have joined in the appointment of Henry S. Dennison, president Dennison Mfg. Co., as representative, with Morris L. Cooke, consulting engineer, Philadelphia, as alternate.

Semi-Finished Steel, Raw Materials, Bolts and Rivets

Mill Prices of Semi-Finished Steel

F.o.b. Pittsburgh or Youngstown

Billets and Blooms

	Per Gross Ton
Rerolling, 4-in. and over	$35.00
Rerolling, under 4-in. to and including 1¾-in.	36.00
Forging, ordinary	40.00
Forging, guaranteed	45.00

Sheet Bars

	Per Gross Ton
Open-hearth or Bessemer	$36.00

Slabs

	Per Gross Ton
8 in. x 2 in. and larger	$35.00
Smaller than 8 in. x 2 in.	36.00

Skelp

	Per Lb.
Grooved	1.90c.
Sheared	1.90c.
Universal	1.90c.

Wire Rods

	Per Gross Ton
*Common soft, base	$45.00
Screw stock	$5.00 per ton over base
Carbon 0.20% to 0.40%	3.00 per ton over base
Carbon 0.41% to 0.55%	5.00 per ton over base
Carbon 0.56% to 0.75%	7.50 per ton over base
Carbon over 0.75%	10.00 per ton over base
Acid	15.00 per ton over base

*Chicago mill base is $46. Cleveland mill base, $45.

Prices of Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports

	Per Gross Ton
Old range Bessemer, 51.50% iron	$4.55
Old range non-Bessemer, 51.50% iron	4.40
Mesabi Bessemer, 51.50% iron	4.40
Mesabi non-Bessemer, 51.50% iron	4.25
High phosphorus, 51.50% iron	4.15

Foreign Ore, c.i.f. Philadelphia or Baltimore

	Per Unit
Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algerian	9.50c. to 10c.
Iron ore, Swedish, average 66% iron	9.50c.
Manganese ore, washed, 51% manganese, from the Caucasus	40c. to 42c.
Manganese ore, high grade, nominal	35c. to 44c.
Tungsten ore, high grade, per unit, in 60% concentrates	$11.75 to $12.50
	Per Ton
Chrome ore, Indian basic, 48% Cr_2O_3, crude, c.i.f. Atlantic seaboard	$22.50
	Per Lb.
Molybdenum ore, 85% concentrates of MoS_2, delivered	50c. to 55c.

Coke

	Per Net Ton	
Furnace, f.o.b. Connellsville prompt	$3.50 to	$3.75
Foundry, f.o.b. Connellsville prompt	4.50 to	5.00
Foundry, by-product, Ch'go ovens		9.75
Foundry, by-product, New England, del'd		12.00
Foundry, by-product, Newark or Jersey City, delivered	9.59 to	10.77
Foundry, Birmingham	5.50 to	6.00
Foundry, by-product, St. Louis or Granite City		10.00

Coal

	Per Net Ton	
Mine run steam coal, f.o.b. W. Pa. mines	$2.00 to	$2.25
Mine run coking coal, f.o.b. W. Pa. mines	2.00 to	2.25
Mine run gas coal, f.o.b. Pa. mines	2.50 to	2.75
Steam slack, f.o.b. W. Pa. mines	1.30 to	1.40
Gas slack, f.o.b. W. Pa. mines	1.50 to	1.60

Ferromanganese

	Per Gross Ton
Domestic, 80%, furnace or seab'd.	$88.00 to $95.00
Foreign, 80%, Atlantic or Gulf port, duty paid	88.00

Spiegeleisen

	Per Gross Ton Furnace
Domestic, 19 to 21%	$32.00 to $34.00
Domestic, 16 to 19%	31.00 to 33.00

Electric Ferrosilicon

	Per Gross Ton Delivered
50%	$85.00 to $87.50
75%	145.00 to 150.00

Per Gross Ton Furnace		*Per Gross Ton Furnace*	
10%	$35.00	12%	$39.00
11%	37.00	14 to 16%	$45 to 46.00

Bessemer Ferrosilicon

F.o.b. Jackson County, Ohio, Furnace

Per Gross Ton		*Per Gross Ton*	
10%	$33.00	12%	$37.00
11%	35.00		

Silvery Iron

F.o.b. Jackson County, Ohio, Furnace

Per Gross Ton		*Per Gross Ton*	
6%	$25.50	10%	$31.00
7%	26.50	11%	33.00
8%	27.50	12%	35.00
9%	29.00		

Other Ferroalloys

Ferrotungsten, per lb. contained metal, del'd	$1.06 to $1.10
Ferrochromium, 4 to 6% carbon and up, 65 to 70% Cr., per lb. contained Cr. delivered, in carloads	11.50c.
Ferrovanadium, per lb. contained vanadium, f.o.b. furnace	$3.25 to $4.00
Ferrocarbontitanium, 15 to 18%, per net ton, f.o.b. furnace, in carloads	$200.00
Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per net ton	$91.00
Ferrophosphorus, electric, 24%, f.o.b. Anniston, Ala., per net ton	$122.50

Fluxes and Refractories

Fluorspar

	Per Net Ton
Domestic, 85% and over calcium fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines	$17.00 to $18.00
No. 2 lump, Illinois and Kentucky mines	$20.00
Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid,	$17.00 to $17.50
Domestic, No. 1 ground bulk, 98 to 98% calcium fluoride, not over 2½% silica, f.o.b. Illinois and Kentucky mines	$32.50

Fire Clay

	Per 1000 f.o.b. Works	
	High Duty	Moderate Duty
Pennsylvania	$40.00 to $43.00	$33.00 to $40.00
Maryland	43.00 to 46.00	38.00 to 40.00
New Jersey	55.00 to 75.00	
Ohio	40.00 to 43.00	38.00 to 40.00
Kentucky	40.00 to 43.00	38.00 to 40.00
Illinois	40.00 to 43.00	35.00 to 38.00
Missouri	40.00 to 43.00	35.00 to 38.00
Ground fire clay, per ton	6.50 to	7.50

Silica Brick

	Per 1000 f.o.b. Works
Pennsylvania	$43.00
Chicago	52.00
Birmingham	50.00
Silica clay, per ton	$8.00 to 9.00

Magnesite Brick

	Per Net Ton
Standard sizes, f.o.b. Baltimore and Chester, Pa.	$65.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.	40.00

Chrome Brick

	Per Net Ton
Standard size	$45.00 to $50.00

Mill Prices of Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts

(Less-than-Carload Lots)

(F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago)

	Per Cent Off List
Machine bolts, small, rolled threads	60 and 10
Machine bolts, all sizes, cut threads	50, 10 and 10
Carriage bolts, smaller and shorter, rolled threads	50, 10 and 10
Carriage bolts, cut threads, all sizes	50 and 10
Eagle carriage bolts	65 and 10
Lag bolts	60, 10 and 10
Plow bolts, Nos. 3 and 7 heads	50 and 10
(Extra of 20% for other style heads)	
Machine bolts, c.p.c. and t. nuts, ⅜ x 4 in.,	45, 10 and 5
Larger and longer sizes	45, 10 and 5
Bolt ends with hot-pressed nuts	50, 10 and 10
Bolt ends with cold-pressed nuts	45, 10 and 5
Hot-pressed nuts, blank and tapped, square,	4.00c. per lb. off list
Hot-pressed nuts, blank or tapped, hexagons,	4.40c. per lb. off list
C.p.c. and t. square or hex. nuts, blank or tapped	4.10c. per lb. off list
Washers*	6.75c. to 6.50c. per lb. off list

*F.o.b. Chicago and Pittsburgh.

The discount on machine, carriage and lag bolts is 5 per cent more than above for car lots. On hot-pressed and cold-punched nuts the discount is 25c. more per 100 lb. than quoted above for car lots.

Bolts and Nuts

(Quoted with actual freight allowed up to but not exceeding 50c. per 100 lb.)

	Per Cent Off List
Semi-finished hexagon nuts:	
⅞ in. and smaller, U. S. S.	80, 10 and 5
⅞ in. and larger, U. S. S.	75, 10 and 5
Small sizes, S. A. E.	80, 10, 10 and 5
S. A. E., ⅞ in. and larger	75, 10, 10 and 5
Stove bolts in packages	80, 10 and 5
Stove bolts in bulk	80, 10, 5 and 2½
Tire bolts	60 and 5

Semi-Finished Castellated and Slotted Nuts

(Actual freight allowed up to but not exceeding 50c. per 100 lb.)

(To jobbers and consumers in large quantities)

	Per 100 Net S.A.E.	U.S.S.		Per 100 Net S.A.E.	U.S.S.
¼-in.	$0.44	$0.44	⅝-in.	$2.35	$2.40
5/16-in.	0.515	0.515	¾-in.	3.00	3.60
⅜-in.	0.62	0.66	⅞-in.	5.65	5.80
7/16-in.	0.79	0.90	1-in.	8.00	8.90
½-in.	1.01	1.05	1⅛-in.	12.60	13.10
9/16-in.	1.38	1.42	1¼-in.	18.35	18.35
⅝-in.	1.76	1.73	1⅜-in.	21.00	21.00

Larger sizes.—Prices on application.

Large Rivets

	Base Per 100 Lb.
F.o.b. Pittsburgh	$2.45 to $2.60
F.o.b. Cleveland	2.70
F.o.b. Chicago	2.60 to 2.75

Small Rivets

	Per Cent Off List
F.o.b. Pittsburgh	70, 10 and 5 to 70 and 10
F.o.b. Cleveland	70, 10 and 5 to 70 and 10
F.o.b. Chicago	70, 10 and 5 to 70 and 10

Cap and Set Screws

(Freight allowed up to but not exceeding 50c. per 100 lb.)

	Per Cent Off List
Milled cap screws	80 and 10
Milled standard set screws, case hardened,	80 and 5
Milled headless set screws, cut thread	80
Upset hex. head cap screws, U. S. S. thread,	80, 10 and 10
Upset hex. cap screws, S.A.E. thread,	80, 10 and 10
Upset set screws	80, 10 and 5
Milled studs	70 and 5

Chicago

Rail Contracts Total 200,000 Tons and Inquiry Is Heaviest Since 1921

CHICAGO, Oct. 11.—The placing of contracts for over 200,000 tons of rails is the feature of this market. The Santa Fe has placed a large tonnage and the St. Paul has closed for 40,000 tons. The Illinois Central has placed 31,000 tons with the Tennessee company and 35,000 tons with the Illinois Steel Co. The Union Pacific is said to have awarded 23,000 tons to a Chicago district maker, and the Northern Pacific has contracted for 5500 tons with a Western mill. As yet specifications against fall contracts have not been placed, and as a result, one mill is down and will not resume operations until about Nov. 1, and the other maker continues to operate alternate weeks on rails and structural shapes. Mills report that inquiry for rails is the heaviest since 1921.

Not taking rails into consideration, both new business and specifications in finished steel products are equal to shipments. Awards of large building projects pending in Chicago are slow at being made, but fabricators have this week booked over 6000 tons for three highway bridges.

Pig Iron.—The market is steady, and two users in Chicago territory have each taken 1000 tons at $21, furnace. On the whole, sales for the week show an upturn as compared with the previous seven days, and a fair tonnage has been booked for the first quarter. In the main, jobbing foundries in Chicago are not particularly active, and this is attributed by some to overexpansion of the industry and by others to the comparatively high labor rates in the city as compared with those in surrounding territory. Manufacturers' foundries are busy, and judging from the rate of pig iron shipments, show no indication of a letdown. Both jobbing and manufacturers' foundries in outlying districts, and in particular to the east of Chicago, are busy. Dealers are being given little trouble from hold-up orders, but are experiencing some difficulty in keeping customers satisfied. In not a few instances it has been necessary to speed up shipments and orders have been placed for iron supplementing contracts for the fourth quarter. The last few days have seen greater activity in charcoal iron sales, with some users buying further in advance. In some quarters, it is believed that a further cut will have to be made to stimulate sales, but it is also reported that rather than accept a lower price some producers will temporarily withdraw from the market and give other makers who have large stocks an opportunity to liquidate. At the moment there appears to be no hesitancy on the part of any producers to take orders. The market in low phosphorus iron is fairly active and is showing greater strength as the result of a shortage of the higher silicon grades. The silvery market is quiet, with prices steady. Producers are said to be well sold on the lower grades and are centering their attention on obtaining orders for the higher silicon grades.

Quotations on Northern foundry, high phosphorus and malleable iron are f.o.b. local furnace, and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards:

Northern No. 2 foundry, sil. 1.75 to 2.25	$21.00
Northern No. 1 foundry, sil. 2.25 to 2.75	21.50
Malleable, not over 2.25 sil.	21.00
High phosphorus	21.00
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	27.04
Southern No. 2 (all rail)	26.01
Southern No. 2 (barge and rail)	24.18
Low phos., sil. 1 to 2 per cent, copper free	$29.50 to 30.00
Silvery, sil. 8 per cent	32.29
Bessemer ferrosilicon, 14 to 15 per cent	45.79

Ferroalloys.—Several sales of ferromanganese are reported this week at $95, seaboard, or $102.56, delivered. The price of $88, seaboard, appears to have disappeared entirely from this market. Users of 50 per cent ferrosilicon who are covered for the remainder of the year are releasing liberal specifications. Spiegeleisen is quiet insofar as new sales are concerned, but shipments against past obligations are holding up well.

We quote 80 per cent ferromanganese, $95.56 to $102.56, delivered Chicago; 50 per cent ferrosilicon, $85, delivered; spiegeleisen, 18 to 22 per cent, $41.76, delivered Chicago.

Sheets.—All makers of sheets in this territory are adhering to the recent advance of $2 a ton, and Chicago delivered prices are now firm at 3.25c. for No. 24 black, 2.55c. for No. 10 blue annealed, and 4.10c. for No. 24 galvanized. Buying, which was light immediately following the advance, has been resumed and new business this week is fair. Stocks in the hands of consumers are low, as is indicated by pressure from practically all users for the best possible deliveries. Specifications are heavier than at the end of September and are practically 50 per cent greater than shipments, which are being made at a rate close to mill capacity. Delivery dates are being pushed further into the future, as users place orders with the mills for their requirements in the next two to three months. Galvanized sheets for roofing are particularly active.

Chicago delivered prices from mill are 3.25c. for No. 24 black; 2.55c. for No. 10 blue annealed; 4.10c. for No. 24 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Plates.—The market is stronger largely on account of business from the oil fields. The plate tonnage included in a recent 22,000-ton inquiry for steel by the Pennsylvania Railroad was quoted at 2.10c., Chicago, by three local makers. Bids by Eastern producers were 1.90c., base mill. Chicago mills this week booked 15,000 tons of tank steel for the Southwestern oil fields. Fresh inquiry from that territory totals 20,000 to 30,000 tons, and a tank user in California will require 5000 to 10,000 tons of plates.

The mill quotation on plates is 2.10c. per lb., base, Chicago.

Structural Material.—Plain material is steady at 2.10c., Chicago. Bids made to the Pennsylvania Railroad last week show that two Chicago makers bid 2.10c., Chicago, on shapes, whereas the ruling quotation from Eastern producers was 2c., mill. Specifications from fabricators show no marked falling off, but structural awards are not heavy, and fresh inquiry is gradually diminishing.

The mill quotation on plain material is 2.10c. per lb. base, Chicago.

Bars.—Billet steel bar makers' obligations are heavy, and bookings extend well into December. In the face of this situation users are entering orders farther in advance. This is in contrast with other finished steel products, on which close buying and specifying are still the rule. Orders to mills are heavy and show a substantial increase over the average late in September. A Chicago user this week took 5000 tons of billet steel bars at the full going price of 2.10c., Chicago. Bids on the bar portion of a recent inquiry by the Pennsylvania Railroad show that local makers quoted 2.10c., Chicago, and that Pittsburgh, Buffalo and Youngstown producers bid 2c., base mill. Specifications for iron bars from the railroads are light, and the market generally is much quieter than a week ago. Bar iron quotations remain steady at 2c., Chicago. Forging bars are in good demand, and producers are having no difficulty in obtaining the full schedule of extras. Prices of alloy steel bars are steady, but the demand is lighter than it was during the middle of September. The use of rail steel bars for concrete reinforcing is extensive in this territory, and one mill reports over 500 tons booked during the week in orders of less than 100 tons each. Both makers at Chicago Heights are on double turn, and on that basis have backlogs of from two and one-half to three months. New business continues at the rate maintained throughout September and is equal to shipments.

Mill prices per lb. are: Mild steel bars, 2.10c., base, Chicago; common bar iron, 2c., base, Chicago; rail steel bars, 2c., base, Chicago.

Rails and Track Supplies.—Railroads in Western territory have placed 200,000 tons of rails in the past

week. This makes a total of 300,000 tons placed with Chicago makers this fall. Accessory contracts are running unusually heavy, because railroads are not only taking the quotas necessary with the rails bought, but are figuring on large track maintenance programs. Track supply contracts are calling for close to 20 per cent of the rail tonnage placed. On that basis 60,000 tons has been booked by Chicago makers in recent contracts. Mills here expect a total of 575,000 tons of rails to be placed before the present buying movement is over. The Santa Fe has awarded its tonnage, a large share having been taken by the Colorado Fuel & Iron Co., Rail inquiries which are still open include those of the Chesapeake & Ohio, the Rock Island, the Missouri Pacific, and 225,000 tons for the New York Central. A contract for 15,000 tons of steel tie plates this week brought the full schedule of $2.35, base, per 100 lb.

Standard Bessemer and open-hearth rails, $43; light rails, rolled from billets, $36 to $38 per gross ton, f.o.b. maker's mill.

Standard railroad spikes, 2.90c. per lb. mill; track bolts with square nuts, 3.90c. mill; steel tie plates, 2.35c. mill; angle bars, 2.75c. mill.

Reinforcing Bars.—This week has been unusually quiet from the standpoint of lettings and fresh inquiry. Pending business totals 8000 to 10,000 tons, but, owing to the paucity of awards, backlogs of bar companies are slowly being reduced. Competition for going business is keen and the price of 2.25c., local warehouse, which is being done on large tonnages, lacks strength. At the same time 2.60c. per lb. is still being obtained for smaller tonnages of billet steel bars. New contracts and recent inquiries will be found on page 1103.

Bolts, Nuts and Rivets.—Prices are steady except on large rivets, for which most orders are being taken at $2.60, base, per 100 lb. Small orders for prompt delivery, however, continue to bring $2.70 to $2.75. Specifications for the first week in October are up to the average for September, which was a trifle lighter than in the corresponding month a year ago.

Wire Products.—Specifications from the manufacturing trade are equal to those of the previous week, and delays in transportation due to floods are less heard of now than late in September. The demand for nails, while good for this time of year, is slackening as building activity recedes with the approach of the winter months. The railroads have been large users of nails this year and are still taking fairly large quantities. Demand from the jobbing trade is holding steady, but at a slight recession from the volume of mid-September. Business is slow in Utah, where beet growers are facing lower prices.

Cold-Finished Steel Bars.—Demand is steady and orders are being received at about the average rate of September. Most transactions this week are at a price of 2.50c., Chicago, and as low as 2.40c. appears to be obtainable only on very attractive business.

Cold-Rolled Strip.—Cold-rolled strip remains in good demand, although orders to mills indicate a slackening in the rate of consumption by the automobile trade. The price lacks strength, and sales are reported at 3.25c., Cleveland, or 3.55c., delivered Chicago. One maker, however, claims to be adhering closely to a Chicago delivered price of 3.90c.

Cast Iron Pipe.—Final action has not yet been taken on Chicago's inquiry for 448 tons of 16-in. Class C pipe on which the National Cast Iron Pipe Co. was low with a bid of $48, delivered, or $39.80, Birmingham. Approximately 60 per cent of the business being placed in this territory is with contractors who are paying close to $41, Birmingham, for pipe 6 in. in diameter and larger. The general market on this size ranges from $39 to $41, or $47.20 to $49.20, delivered Chicago. Bookings of small tonnages this week are in good volume, but they are emanating principally from small municipalities, the public utilities being inactive. A report is current that Chicago will soon be in the market for about 2500 tons. Muskegon, Mich., will close Oct. 11 on 100 tons of 6-in. Class B pipe. The National Cast Iron Pipe Co. has taken 125 tons of 12-in. Class B pipe for East Chicago, Ind., and 300 tons of 6-in. Class B pipe for Litchfield, Ill.

We quote per net ton, delivered, Chicago, as follows: Water pipe, 4-in., $51.20 to $53.20; 6-in. and over, $47.20 to $49.20; Class A and gas pipe, $4 extra.

Old Material.—The market has no staying power, and prices are generally weaker. Users are buying close to actual requirements and are exhibiting no interest in stocks for winter use, it evidently being their intention to rely upon satisfactory railroad service. There have been no transactions in heavy melting steel this week, users having refused sellers' offerings at $13.50 per gross ton, delivered. Bids on railroad lists are much closer to ruling market prices than was the case several weeks ago. The Santa Fe recently obtained $13.60 per gross ton, delivered, for heavy melting steel, $12.75 per net ton on track for railroad wrought, and $17 per gross ton, delivered, for railroad malleable. Borings are inactive, and users are refusing this grade at $9.50 per gross ton, delivered. A buyer for a steel mill asserts that he is out of the market, and a large merchant pig iron producer is said to have covered for the remainder of the year.

We quote delivered in consumers' yards, Chicago and vicinity, all freight and transfer charges paid for all items, except relaying rails, including angle bars to match, which are quoted f.o.b. dealers' yards:

Per Gross Ton	
Heavy melting steel	$13.00 to $13.50
Frogs, switches and guards, cut apart, and miscellaneous rails	14.75 to 15.25
Shoveling steel	13.00 to 13.50
Hydraulic compressed sheets	11.25 to 11.75
Drop forge flashings	9.00 to 9.50
Forged cast and rolled steel carwheels	17.00 to 17.50
Railroad tires, charging box size	18.00 to 18.50
Railroad leaf springs, cut apart	17.50 to 18.00
Steel couplers and knuckles	16.00 to 16.50
Coil springs	17.75 to 18.25
Low phosphorus punchings	16.00 to 16.50
Axle turnings, foundry grade	12.25 to 12.75
Axle turnings, blast fur. grade	9.00 to 9.50
Relaying rails, 56 to 60 lb	25.50 to 26.50
Relaying rails, 65 lb. and heavier	26.00 to 31.00
Rerolling rails	16.50 to 17.00
Steel rails, less than 3 ft.	16.50 to 17.00
Iron rails	14.00 to 14.50
Cast iron borings	9.00 to 9.50
Short shoveling turnings	9.00 to 9.50
Machine shop turnings	6.50 to 7.00
Railroad malleable	16.50 to 17.00
Agricultural malleable	15.00 to 15.50
Angle bars, steel	15.00 to 15.50
Cast iron carwheels	14.50 to 15.00
Per Net Ton	
No. 1 machinery cast	16.50 to 17.00
No. 1 railroad cast	15.50 to 16.00
No. 1 agricultural cast	15.50 to 16.00
Stove plate	14.00 to 14.50
Grate bars	13.50 to 14.00
Brake shoes	13.00 to 13.50
Iron angle and splice bars	14.00 to 14.50
Iron arch bars and transoms	18.75 to 19.25
Iron car axles	22.00 to 22.50
Steel car axles	17.00 to 17.50
No. 1 railroad wrought	12.75 to 13.25
No. 2 railroad wrought	11.75 to 12.25
No. 1 busheling	10.00 to 10.50
No. 2 busheling	6.50 to 7.00
Locomotive tires, smooth	16.00 to 16.50
Pipes and flues	9.00 to 9.50

Warehouse Prices, f.o.b. Chicago

	Base per Lb.
Plates and structural shapes	5.10c.
Mild steel bars	3.00c.
Reinforcing bars, billet steel	2.25c. to 2.60c.
Cold-finished steel bars and shafting—	
Rounds and hexagons	3.60c.
Flats and squares	4.10c.
Hoops	4.15c.
Bands	3.65c.
No. 24 black sheets	3.95c.
No. 10 blue annealed sheets	3.50c.
No. 24 galvanized sheets	4.80c.
Standard railroad spikes	3.55c.
Track bolts	4.55c.
Structural rivets	3.50c.
Boiler rivets	3.70c.
	Per Cent Off List
Machine bolts	50 and 5
Carriage bolts	47½
Coach or lag screws	55 and 5
Hot-pressed nuts, square, tapped or blank	3.25c. off per lb.
Hot-pressed nuts, hexagons, tapped or blank	3.75c. off per lb.
No. 8 black annealed wire, per 100 lb	$3.30
Common wire nails, base, per keg	3.05
Cement coated nails, base, per keg	3.05

Cleveland

Steel Buying Slows Up as Automobile Output Declines—Pig Iron Advances

CLEVELAND, Oct. 11.—Although there has been some decline in market activity, the volume of finished steel business in this territory is holding up well in view of the heavy specifications received late last month on expiring third quarter contracts, and the tonnage booked so far this month is about the same as during the corresponding period in September. However, it is hardly expected that as good a comparative showing will be made the latter part of the month. Buying is well scattered, mostly in small lots. Most buyers are still refraining from making fourth quarter contracts, but are placing orders for material as needed.

The demand for sheets and other mill products from the automotive industry has declined considerably. Sales by some of the Michigan automobile companies have been disappointing recently. This is attributed largely to the continual rainy weather, which has resulted in a greater curtailment of production by a few of the manufacturers than is usual for this season. Plants that have cut their production schedules include those of two large automobile companies, one of which is reported to be down to 50 per cent of capacity. However, this curtailment has not extended to all motor car builders, and the General Motors Corporation units are understood to be still operating at full capacity.

The building field has shown more activity than for some time. Several awards, aggregating over 7000 tons, have cleaned up pending work, and little additional tonnage is in prospect. The demand for plates is easier. The Great Lakes Towing Co., Cleveland, will build two tugs, for which it has placed 200 tons of plates. Prices are holding firmly to 2c., Pittsburgh, for steel bars and structural material, and at 1.90c. for plates.

Pig Iron.—The market has a very firm tone, and Cleveland furnaces have advanced prices on foundry and malleable iron 50c. a ton to $19.50, furnace, for local delivery and 25c. a ton to $18.50 for outside shipment. One Michigan producer has made a 50c. a ton advance. In the Valley district $18.50 is generally quoted, although a price of $18, Valley, has not entirely disappeared. Business continues to come out in fair volume, with sales aggregating about 25,000 tons for the past week. This tonnage was largely for early shipment or for the quarter. Few consumers are as yet showing any interest in buying iron for the first quarter, and some of the sellers are not actively seeking business for that delivery. Foundries, as a rule, are carrying low stocks and ordering iron against contracts as needed. Foundries in this territory are operating at from 75 to 85 per cent of capacity. The ruling price in western Ohio and in Indiana is unchanged at $19, furnace. In Michigan there is now a range of $19.50 to $20, furnace. We note the sale of 500 tons of Bessemer iron to a Cleveland consumer, on which the ruling price of $19 is reported to have been shaded.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6.01 from Birmingham:

Basic, Valley furnace	$18.00
Northern No. 2 fdy., sil. 1.75 to 2.25	20.00
Southern fdy., sil. 1.75 to 2.25	26.01
Malleable	20.00
Ohio silvery, 8 per cent	30.52
Standard low phos., Valley furnace	28.00

Warehouse Prices, f.o.b. Cleveland

	Base per Lb.
Plates and structural shapes	3.00c.
Mild steel bars	3.00c.
Cold-finished rounds and hexagons	3.90c.
Cold-finished flats and squares	4.40c.
Hoops and bands	3.65c.
No. 24 black sheets	3.80c.
No. 10 blue annealed sheets	3.25c.
No. 24 galvanized sheets	4.65c.
No. 9 annealed wire, per 100 lb	$3.00
No. 9 galvanized wire, per 100 lb	3.45
Common wire nails, base, per keg	3.00

Semi-Finished Steel.—The demand is holding up to about recent volume. Consumers are securing good deliveries and are not ordering far ahead. Many have not placed fourth quarter contracts and are buying steel as needed. Regular quotations are being maintained with either a Cleveland or Youngstown base.

Sheets.—While sales have fallen off, a moderate volume of new business is still coming out and many of the large producers are booked for 60 days or longer. The demand from the automotive industry has slowed down with the curtailment in the output in automobiles. The demand for tin plate has fallen off, and competition for black sheets in sizes they roll is coming from makers of tin mill black plate. On black sheets 3c., Pittsburgh, is still being quoted by some of the mills and on galvanized 3.85c., Pittsburgh, has not disappeared. Blue annealed sheets are holding well to 2.40c.

Strip Steel.—Demand for hot-rolled strip is not so active, and prices are not so firm as a few weeks ago. Cold-rolled strip manufacturers who usually get a concession of $2 a ton are reported to have been able to buy wide hot-rolled strip at 2.10c., or a concession of $4 a ton. The demand for cold-rolled strip from the automotive industry has declined. While the usual minimum price is 3.25c., Cleveland, for round lots, there are reports of lower quotations.

Alloy Steel.—One producer has announced that it will retain for the remainder of the year the prices that have prevailed for some time. However, an inquiry for 2000 tons of 3½ per cent nickel steel from a northern Ohio consumer has brought out a price of 4.35c., or $1 a ton below the usual quotation.

Warehouse Business.—The demand continues good, showing little change from that of last month. Sheet prices out of stock are being held at the recent advance.

Bolts, Nuts and Rivets.—Some of the agricultural implement manufacturers have come in the market for their seasonal requirements in bolts and nuts. Specifications are holding up to about recent volume, and little is heard of price concessions in this market. The market on large rivets lacks strength, and round lots will probably go at more than $2 a ton under the regular schedule.

Old Material.—The market has a very weak tendency, which evidently has resulted from a continued absence of demand from mills and lack of support by dealers, as the latter are well cleaned up on old orders. Consequently considerable scrap is backing up on the market. Machine shop turnings are particularly weak, having declined 75c. a ton. Heavy melting steel is down 25c. a ton, and compressed sheet steel, railroad wrought and malleable and busheling are lower. Valley dealers are offering $16.50 for heavy melting steel for Sharon delivery. A small lot of railroad malleable brought $17.50.

We quote per gross ton delivered consumers' yards in Cleveland:

Heavy melting steel	$15.00 to $15.25
Rails for rolling	16.25 to 16.50
Rails under 3 ft	17.50 to 18.00
Low phosphorus billet, bloom and slab crops	19.00 to 19.50
Low phosphorus sheet bar crops	18.50 to 19.00
Low phosphorus plate scrap	18.50 to 19.00
Low phosphorus forging crops	16.75 to 17.25
Cast iron borings	11.50 to 11.75
Machine shop turnings	9.50 to 10.00
Mixed borings and short turnings	11.50 to 11.75
Compressed sheet steel	13.50 to 14.00
No. 1 railroad wrought	11.50 to 12.00
No. 2 railroad wrought	15.00 to 15.25
Railroad malleable	17.00 to 17.50
Light bundled sheet stampings	12.00 to 12.50
Steel axle turnings	12.50 to 13.00
No. 1 cast	16.50 to 17.00
No. 1 busheling	12.00 to 12.50
No. 2 busheling	11.50 to 11.75
Drop forge flashings, 15 in. and under	11.50 to 12.00
Railroad grate bars	12.50 to 13.00
Stove plate	12.50 to 13.00
Pipes and flues	10.00 to 10.50

Iron Ore.—Although Lake shipments the past two months have been very heavy, the bulk of the ore is going directly to furnaces. The dock balance at Lake Erie ports Oct. 1 was 6,897,353 tons, or about 1,000,000 tons greater than on Sept. 1. The amount on dock Oct. 1 last year was 7,015,683 tons. Receipts at Lake Erie

port in September were 7,345,841 tons, and for the season, until Oct. 1, 31,985,699 tons, as compared with 30,306,329 tons received during the same period last year. Shipments from Lake Erie ports last month were 4,721,532 tons and for the season, until Oct. 1, 23,486,588 tons, as compared with 21,702,124 tons shipped during the same period of 1925.

Coke.—The Connellsville foundry coke market is very firm, and a further advance of 25c. a ton has been made by one or two producers. However, the price range is unchanged at $4.50 to $5.25, ovens. Connellsville heating coke has declined and is now quoted at $3.10 to $3.50, ovens.

New York

Pig Iron Prices Stronger—Steel Consumption at September Rate

NEW YORK, Oct. 11.—Sales of pig iron by local brokers during the past week totaled about 20,000 tons. More than the usual proportion of recent orders is reported to have covered special grades of iron, particularly low phosphorus. Shipments of low phosphorus from Great Britain have practically ceased as a result of the coal strike, and demands on domestic producers have correspondingly increased. Pending inquiry for pig iron in this market totals 10,000 to 12,000 tons. The Worthington Pump & Machinery Corporation, New York, is inquiring for 3500 tons for the current and first quarters, distributed as follows: 1760 tons for Harrison, N. J.; 420 tons for Holyoke, Mass.; 380 tons for Cambridge, Mass.; 650 tons for Buffalo, and the remainder for Laidlaw Works, Elmwood Place, Ohio. The Utica Heater Co., Utica, N. Y., is in the market for 3000 tons for the first quarter. On the whole, there is little inquiry for first quarter, and, while the larger buyers have bought for the present quarter, their purchases have been conservative, indicating that further orders for that delivery may be placed. Sales of foreign iron are inconsequential, and prices on domestic iron are gradually growing stronger. Eastern Pennsylvania foundry iron is held at $21.50, base furnace, and the best that can be done on Buffalo foundry iron appears to be $18.50, base furnace, with $19 the ruling quotation. A New York State furnace outside of Buffalo, however, is still very aggressive in seeking new business. The Port Henry furnace, which is down for repairs, is expected to get back in blast by the middle of November. Meanwhile, obligations are being taken care of from furnace stocks.

We quote per gross ton delivered in the New York district as follows, having added to furnace prices $2.52 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.54 from Virginia:

East Pa. No. 2 fdy., sil. 1.75 to 2.25	$22.89 to $23.52
East Pa. No. 2X fdy., sil. 2.25 to 2.75	23.39 to 24.02
East Pa. No. 1X fdy., sil. 2.75 to 3.25	23.89 to 24.52
Buffalo fdy., sil. 1.75 to 2.25 (all rail)	23.41 to 23.91
No. 2 plain fdy., sil. 1.75 to 2.25 (by barge, del'd alongside in lighterage limits, N. Y. and Brooklyn)	20.00 to 21.00
No. 2 Virginia fdy., sil. 1.75 to 2.25	27.54 to 28.04

Ferroalloys.—There are no developments in either the ferromanganese or spiegeleisen markets. An occasional sale of a carload or small lot is reported, with specifications on contracts heavy. Prices continue firm and unchanged. Some German spiegeleisen, contracted for about a month ago, is now arriving at New Orleans. It is available at about the same price as the domestic in that territory.

Reinforcing Bars.—The Kalman Steel Co. will furnish 1700 tons of bars for the Kymson Building, New York, and 500 tons for the last contract on the Staten Island bridges. Two more sections of subway will take 500 tons, but there are no other large inquiries before the market, and business for the remainder of the year is expected to consist largely of small orders for immediate delivery. Foreign bars continue to be offered at figures up to $10 per ton less than the domestic product on large jobs, but contractors, especially on public utility projects, have hesitated to let the business go out of the country. Local warehouses continue to quote 3.15c. per lb., delivered at job, while the mill price is holding at 2c., Pittsburgh, for large tonnages, and at 2.10c. for lots of less than 100 tons. The Youngstown warehouse price is unchanged at 2.50c., or 2.87½c., delivered New York.

Warehouse Business.—Purchases of black, galvanized and blue annealed sheets have been increasing lately, and as a result the current schedule of prices is quite firm. Demand for structural material out of stock is also good, with orders occasionally ranging up to 15 and 20 tons. Judging October business on the basis of the early part of the month, warehouse sales should equal those of September.

Finished Material.—Consumers appear to be taking steel at as good a rate as in September, so that if one-third of the month is any criterion, October as a whole will measure up well with September. The movement is more definite where it is a case of specifications against contracts, such as sheets, pipe and wire products. New business is as yet hardly up to last month's rate, but this fact is not indicative of much, as such

Warehouse Prices, f.o.b. New York

	Base per Lb.
Plates and structural shapes	3.24c.
Soft steel bars and small shapes	3.24c.
Iron bars	3.24c.
Iron bars, Swedish charcoal	7.00c. to 7.25c.
Cold-finished steel shafting and screw stock—	
Rounds and hexagons	4.00c.
Flats and squares	4.50c.
Cold-rolled strip, soft and quarter hard	6.25c.
Hoops	4.40c.
Bands	3.99c.
Blue annealed sheets (No. 10 gage)	3.89c.
Long terne sheets (No. 28 gage)	6.35c.
Standard tool steel	12.00c.
Wire, black annealed	4.50c.
Wire, galvanized annealed	5.15c.
Tire steel, 1½ x ⅛ in. and larger	3.30c.
Smooth finish, 1 to 2½ x ¼ in. and larger	3.65c.
Open-hearth spring steel, bases	4.50c. to 7.00c.

	Per Cent Off List
Machine bolts, cut thread	40 and 10
Carriage bolts, cut thread	30 and 10
Coach screws	40 and 10

Boiler Tubes—	Per 100 Ft.
Lap welded steel, 2-in.	$17.32
Seamless steel, 2-in.	20.24
Charcoal iron, 2-in.	25.00
Charcoal iron, 4-in.	67.00

Discounts on Welded Pipe

Standard Steel—	Black	Galv.
½-in. butt	46	29
⅝-in. butt	51	37
¾-in. butt	53	39
2½-6-in. lap	48	35
7 and 8-in. lap	44	17
11 and 12-in. lap	37	12
Wrought Iron—		
½-in. butt	4	+19
¾-in. butt	11	+ 9
1-1½-in. butt	14	+ 6
2-in. lap	5	+14
3-6-in. lap	11	+ 6
7-12-in. lap	3	+16

Tin Plate (14 x 20 in.)

	Prime	Seconds
Coke, 100 lb. base box	$6.45	$6.20
Charcoal, per box—	A	AAA
IC	$9.70	$12.10
IX	12.00	14.25
IXX	13.90	16.00

Terne Plate (14 x 20 in.)

IC—20-lb. coating	$10.00 to $11.00
IC—30-lb. coating	12.00 to 13.00
IC—40-lb. coating	13.75 to 14.25

Sheets, Box Annealed—Black, C. R. One Pass

	Per Lb.
Nos. 18 to 20	4.15c.
No. 22	4.20c.
No. 24	4.25c.
No. 26	4.45c.
No. 28*	4.60c.
No. 30	4.85c.

Sheets, Galvanized

	Per Lb.
No. 14	4.50c. to 4.75c.
No. 16	4.60c. to 4.85c.
No. 18	4.75c.
No. 20	4.90c.
No. 22	4.95c.
No. 24	5.10c.
No. 26	5.35c.
No. 28*	5.60c.
No. 30	6.00c.

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

buying was notably irregular, however well it averaged at the end of the month. A sizable volume of concrete bar business is pending, and considerable pressure is being put on mills for concessions from the existing price but without apparently any success. Fresh inquiries for fabricated structural steel were swelled by another section of New York subway work, requiring 11,500 tons, and a convention hall at Atlantic City calling for 10,000 tons. Structural awards locally exceeded 34,000 tons last month, or nearly 12 per cent over August. Noteworthy orders and inquiries appeared in the railroad equipment field.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.34c. per lb.; plates, 2.24c.; structural shapes, 2.34c.; bar iron, 2.24c.

Cast Iron Pipe.—Active purchasing of small lots, particularly by private companies, continues to build up a good total business in bell and spigot, gas and water pipe. Most makers are fully booked on the smaller sizes for the next two months or more, but can still offer desirable delivery on specifications larger than 12-in. The Board of Estimate and Apportionment, New York, to which purchase of 10,000 tons of pipe has been referred for decision on the award, stated Oct. 7 that action would be taken within two weeks. This tonnage, on which the Gelsenkirchen Bergwerks was low bidder, has been pending for several weeks.

We quote pressure pipe per net ton, f.o.b. New York in carload lots, as follows: 6-in. and larger, $49.60 to $52.60; 4-in. and 5-in., $54.60 to $57.60; 3-in., $64.60 to $67.60; with $5 additional for Class A and gas pipe.

Coke.—The upward trend of the market continues strong, with a steady demand both for furnace and foundry grade. Standard furnace is quoted at about $5 per ton, Connellsville, for spot shipment, and furnace for prompt delivery brings $3.75 to $4 per ton, Connellsville. Delivered prices of standard foundry coke are $8.91 to $9.41, Newark and Jersey City, N. J.; $9.03 to $9.53, northern New Jersey, and $9.79 to $10.29, New York or Brooklyn. By-product foundry coke continues at $9.59 to $10.77, delivered Newark or Jersey City.

Old Material.—The market continues moderately active, with consumers at Coatesville, Pottsville, Pa., and Claymont, Del., still suspending shipments on contracts. A mill at Harrisburg, Pa., usually a fairly active consumer of bundled skeleton, stove plate, cast borings and machine shop turnings, is still out of the market. On heavy melting steel, brokers are paying from $15.50 per ton to $16.25 per ton, delivered eastern Pennsylvania. Blast furnace scrap is in active demand now, but its immediate future course is not considered promising, as it is reported that in addition to not purchasing cast borings and borings and turnings for Bethlehem, Pa., an important consumer will cancel all orders for Sparrows Point, Md., after Nov. 1, having found that for the present the use of ore at these furnaces is more profitable. At the same time, it is reported that there have been negotiations for the purchase of a large tonnage of borings for Steelton, Pa. Machine shop turnings and bundled skeleton are generally quoted at $13 and occasionally $13.50 per ton, delivered Phoenixville, Pa., and stove plate is held at $13.50 to $14, delivered eastern Pennsylvania, for steel mill grade.

Buying prices per gross ton, New York, follow:

Heavy melting steel (yard)	$9.50 to $10.25
Heavy melting steel (railroad or equivalent)	12.50 to 12.85
Rails for rolling	12.50 to 13.00
Steel car axles	19.75 to 20.25
Iron car axles	24.00 to 24.50
No. 1 railroad wrought	14.00 to 15.00
Forge fire	10.00 to 10.50
No. 1 yard wrought, long	13.00 to 14.00
Cast borings (steel mill)	9.25 to 9.50
Cast borings (chemical)	13.00 to 13.50
Machine shop turnings	9.25 to 9.50
Mixed borings and turnings	8.75 to 9.50
Iron and steel pipe (1 in. diam., not under 2 ft. long)	10.25 to 10.75
Stove plate (steel mill)	9.50 to 10.00
Stove plate (foundry)	11.50 to 12.00
Locomotive grate bars	10.50 to 11.00
Malleable cast (railroad)	16.00 to 16.50
Cast iron carwheels	13.00 to 13.50
No. 1 heavy breakable cast	13.00 to 13.50

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$16.50 to $17.00
No. 1 heavy cast (columns, building materials, etc.), cupola size	15.00 to 15.50
No. 2 cast (radiators, cast boilers, etc.)	14.00 to 14.50

Philadelphia

Pennsylvania Orders 160,000 Tons of Rails—15,000-Ton Basic Purchase

PHILADELPHIA, Oct. 11.—The Pennsylvania Railroad has distributed orders for 160,000 tons of heavy rails and also has ordered a part or all of the 22,000 tons of plates, shapes, bars, sheets, axles, etc., recently inquired for. An Eastern plate manufacturer has bought 15,000 tons of basic pig iron for delivery in the last two months of the year. An inquiry is in the market for 10,000 to 15,000 tons of steel for a convention hall at Atlantic City.

These are the high spots of an iron and steel market, which otherwise is duller than it has been in months. In some lines there are evidences of a slowing down. This is particularly true in structural steel, and it is also true of the foundry trade, jobbing foundries and some of the cast iron pipe makers having slackened production. Demand for plates is slower, and there are gaps in the rolling schedules of some of the structural and bar mills. The steel price situation generally remains firm, although there are occasional concessions on structural shapes, cold-finished steel bars and cold-rolled strip steel.

Pig iron is fairly strong, but the recent advance of 50c. a ton on foundry iron has not been effective on the more important business of the past week. The scrap market is dull, and prices continue soft.

Pig Iron.—Two important purchases marked the pig iron trade of the week. A plate manufacturer bought about 15,000 tons of basic iron for November-December shipment, and a sanitary manufacturer at Trenton, N. J., bought about 1500 tons of foundry iron for delivery over the remainder of the year. Otherwise the week's business was confined to small lots—a carload to 100 tons—of foundry iron for early delivery. On basic iron a price lower than on the last reported sale was made, some of the iron having been sold at $20.50. The smaller transactions in foundry iron have been at $21.50, base furnace, but $21, base, prevailed on the larger sales, and this quotation is still being made by at least one furnace. Eastern pig iron producers have received a circular letter from Edward J. Dougherty, agent in charge of the anti-dumping unit, United States Treasury Department, 641 Washington Street, New York, asking for information regarding alleged dumping of German pig iron in the United States. Pig iron producers are asked to cite specific evidence that the industry is being injured through the sale here of German pig iron at prices alleged to be in violation of the anti-dumping provisions of the tariff law.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$21.76 to $22.26
East. Pa. No. 2X, 2.25 to 2.75 sil.	22.26 to 22.76
East. Pa. No. 1X	22.76 to 23.26
Virginia No. 2 plain, 1.75 to 2.25 sil.	27.67 to 28.67
Virginia No. 2X, 2.25 to 2.75 sil.	28.17 to 29.17
Basic delivered eastern Pa.	20.50 to 21.50
Gray forge	21.00 to 22.00
Malleable	22.00 to 22.50
Standard low phos. (f.o.b. furnace)	22.75 to 23.00
Copper bearing low phos. (f.o.b. furnace)	23.50 to 24.00

Ferromanganese.—No inquiry has appeared for ferromanganese for first quarter. There has been no announcement from makers as to what prices will be quoted for that period. Buying is almost at a standstill. Quotations remain at $88 to $95, furnace.

Billets.—Included in the recent steel orders of the Pennsylvania Railroad was a small tonnage of billets. Demand generally is light. Prices are unchanged at $35, Pittsburgh, for rerolling quality and $40 for forging quality, but on desirable orders these prices have been shaded 50c. a ton.

Plates.—Plate business consists of a fair number of miscellaneous small orders, the aggregate of which is lower with most of the Eastern mills than the average

of the past two or three months. Mills of the district are operating at about 50 to 60 per cent. No deviation from the 1.90c. price has been reported.

Structural Material.—After months of sustained activity, amounting in a few cases to maximum production, some gaps in rolling schedules at structural mills are reported, and local sales offices in one or two instances have been pressed to get in specifications to round out rollings. The amount of fabricated work up for bids is smaller than in some months and prospective builders are taking more than the usual length of time in deciding on quotations recently submitted. A slowing up in building is indicated. Aside from a convention hall at Atlantic City, which may take from 10,000 to 15,000 tons, there is no new work of importance up for bids. Concessions are being made by some of the Eastern mills on desirable business, the range of quotations being 1.90c. to 2c. Pittsburgh.

Old Material.—The scrap market is dull, and prices are easy. It is no longer possible to obtain higher than $16.50 for heavy melting steel, only $13 is being offered for bundled sheets and machine shop turnings by a leading consumer of those grades, and the market for blast furnace borings and turnings has been weakened by reports that a leading consumer will use an exclusive ore mixture after Nov. 1, in some of its furnaces at least. Among the grades which show weakness are heavy breakable cast, stove plate and railroad grate bars, pipe and old iron carwheels.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel	$16.50
Scrap rails	16.50
Steel rails for rolling	17.25 to 17.75
No. 1 low phos., heavy, 0.04 per cent and under	21.00 to 22.00
Couplers and knuckles	18.50 to 19.00
Rolled steel wheels	18.50 to 19.00
Cast iron carwheels	17.00 to 17.50
No. 1 railroad wrought	17.00 to 17.50
No. 1 forge fire	13.50 to 14.00
Bundled sheets (for steel works)	13.00 to 13.50
Mixed borings and turnings (for blast furnace)	12.50 to 13.00
Machine shop turnings (for steel works)	13.00 to 13.50
Machine shop turnings (for rolling mill)	13.50 to 14.00
Heavy axle turnings (or equivalent)	14.50 to 15.00
Cast borings (for steel works and rolling mill)	13.50
Cast borings (for chemical plant)	16.50
No. 1 cast	17.50 to 18.00
Heavy breakable cast (for steel works)	16.00 to 16.50
Railroad grate bars	13.50 to 14.00
Stove plate (for steel works)	13.50 to 14.00
Wrought iron and soft steel pipes and tubes (new specifications)	14.50
Shafting	21.00 to 22.00
Steel axles	23.00 to 24.00

Bars.—Orders and specifications for steel bars are not coming out freely enough to maintain mill operations at the full pace of recent months, and mills are making greater efforts to obtain customers' specifications. Current quotations remain at 2c., Pittsburgh. Bar iron is quoted at 2.22c., Philadelphia.

Warehouse Prices, f.o.b. Philadelphia

	Base per Lb.
Tank steel plates, ¾-in. and heavier	2.80c. to 3.00c.
Tank steel plates, ⅛-in.	3.00c.
Structural shapes	2.75c. to 2.90c.
Soft steel bars, small shapes and iron bars (except bands)	2.90c. to 3.00c.
Round-edge iron	3.50c.
Round-edge steel, iron finished, 1½ x 1½ in.	3.50c.
Round-edge steel, planished	4.30c.
Reinforcing steel bars, square, twisted and deformed	3.00c.
Cold-finished steel, rounds and hexagons	4.00c.
Cold-finished steel, squares and flats	4.50c.
Steel hoops	4.00c. to 4.25c.
Steel bands, No. 12 gage to ⅛-in., inclusive	3.75c. to 3.90c.
Spring steel	5.00c.
No. 24 black sheets	4.35c.
No. 10 blue annealed sheets	3.40c.
No. 24 galvanized sheets	5.30c.
Diamond pattern floor plates—	
¼-in.	5.30c.
⅛-in.	5.50c.
Rails	3.20c.
Tool steel	8.50c.
Swedish iron bars	6.00c. to 6.50c.

Sheets.—With most of the consuming trade covered until the end of the year, new buying of sheets is light. Quotations are 2.40c., Pittsburgh, for blue annealed, 3.95c. to 4c. for galvanized and 3.10c. for black sheets, but much of the tonnage now being shipped was booked at lower prices.

Imports.—Germany continues to ship in considerable pig iron, last week's receipts at Philadelphia from that country being 1350 tons, but the Netherlands also sent in 1525 tons. Other imports were: Iron ore from Algeria, 6900 tons; manganese ore from British West Africa, 4949 tons; chrome ore from Portuguese East Africa, 8799 tons; steel bars from Sweden, 191 tons; structural steel from Belgium, 344 tons.

REINFORCING STEEL

Week's Awards for Concrete Construction Are About 6200 Tons—Inquiries 1800 Tons

Nearly 6200 tons of reinforcing steel was awarded during the week, including one job of 1700 tons, most of the others being comparatively small. Inquiries reported total slightly over 1800 tons. Awards follow:

LA SALLE, ILL., 300 tons, high school, to Olney J. Dean & Co.

MCHENRY, ILL., 200 tons of rail steel, State highway bridge, to Olney J. Dean & Co.

BOSTON, 150 tons, Museum of Fine Arts, to Truscon Steel Co.

BOSTON, 100 tons, H. E. Cline Oven Co., plant, to Truscon Steel Co.

NEW YORK, 1700 tons, Kymson Building, to Kalman Steel Co.

BROOKLYN 100 tons, Cypress Hills Mausoleum, to Republic Fireproofing Co.

PATERSON, N. J., 100 tons, garage, Public Service Products Co., to Concrete Steel Co.

PERTH AMBOY, N. J., 500 tons, Staten Island bridge, from P. J. Carlin Construction Co., general contractor, to Kalman Steel Co.

LOUISVILLE, KY., 105 tons, storage warehouse for O. K. Storage Co., to Concrete Steel Co.

EVANSTON, ILL., 165 tons of rail steel, junior high school, to Calumet Steel Co.

CHICAGO, 110 tons of rail steel, warehouse for Symons & Co., to Calumet Steel Co.

CHICAGO, 500 tons, warehouse for Peck & Hill Furniture Co., to Olney J. Dean & Co.

ST. LOUIS, 400 tons, Terminal warehouse, Little Rock, Ark., to Laclede Steel Co.

BERKELEY, CAL., 800 tons, wharf at foot of University Avenue for the Golden Gate Ferry Co., to an unnamed San Francisco jobber.

SISKIYOU COUNTY, CAL., 100 tons, for irrigation work for the Montague Irrigation District, to unnamed jobber through general contractor's private letting.

SAN FRANCISCO, 100 tons, for the Carter Estate, to Gunn, Carle & Co.

SEATTLE, WASH., 450 tons, Orpheum Theater, to Pacific Coast Steel Co.

Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

NEW YORK, 500 tons involved in two sections of the subway, Rodgers & Hagerty, Inc., and D. C. Serber, Inc., general contractors.

WASHINGTON, 130 tons, addition to Liberty Loan Building.

CHICAGO, 600 tons, Shoreline Apartments, architect, N. K. Holsman.

SACRAMENTO, CAL., 100 tons, for a theater.

SAN FRANCISCO, 200 tons, Hearst-Moulder School.

SAN FRANCISCO, 400 tons, decking for the Carquinez Straits bridge at Crockett, Cal.; bids being taken.

A Spanish-English edition of specifications for wrought carbon steel wheels for railroad service has been issued by the Department of Commerce. It is the standard specification of the American Society for Testing Materials, and is obtainable at 5 cents a copy from the Superintendent of Public Documents, Government Printing Office, Washington.

San Francisco

Quotations on Foreign Steel Higher—1000 Tons of Foundry Iron Placed

SAN FRANCISCO, Oct. 9 (*By Air Mail*)—Since the recent formation of the European steel cartel, a Pacific Coast fabricator is understood to have attempted to place an additional order for foreign structural material with a Continental mill with which he has a contract. He was informed that no fresh business could be booked at his contract price because the formation of the steel consortium had been followed by a general price advance of about 10 per cent. On the other hand, foreign shapes are still quoted locally at 1.75c., duty paid, c.i.f. Coast ports, although on heavy material higher quotations have been named—in a few instances as high as 2.20c. Foreign reinforcing bars are quoted at 1.95c. to 2c., duty paid, c.i.f. Coast ports, and about 1.85c. to 1.90c. is asked for foreign merchant bars. These quotations represent advances of 5c. to 10c. per 100 lb. on concrete bars, and 10c. to 20c. per 100 lb. on merchant bars, over the asking price of a fortnight ago.

With few exceptions, during the past week, buying has not been above the average in any department of the market. The indications of a few weeks ago, that fourth quarter business would be substantial in the amount of tonnage placed, are still evident, but the past week developed a few large individual transactions.

Pig Iron.—The Southern Pacific Co., San Francisco, has placed 1000 tons of foundry iron, sil. 2.75 to 3.25 per cent, with a local broker who is understood to have quoted on Utah iron. No inquiries of importance have come up during the week. Quotations are unchanged.

*Utah basic	$25.00 to $26.00
*Utah foundry, sil. 2.75 to 3.25	25.00 to 26.00
**English foundry, sil. 2.75 to 3.25	25.00
**Indian foundry, sil. 2.75 to 3.25	25.00
**German foundry, sil. 2.75 to 3.25	24.25
**Dutch foundry, sil. 2.75 to 3.25	22.50
**Belgian foundry, sil. 2.75 to 3.25	22.00

*Delivered San Francisco.
**Duty paid, f.o.b. cars San Francisco.

Shapes.—Structural lettings for the week total 3117 tons; fresh inquiries call for 555 tons. The largest individual job, 1400 tons, for a county court house at Santa Barbara, Cal., was taken by the Llewellyn Iron Works, Los Angeles. The Western Pipe & Steel Co., San Francisco, took 600 tons for a cement plant for the Yosemite Portland Cement Co., Merced, Cal. Eastern mills continue to quote plain material at 2.35c., c.i.f. Coast ports.

Plates.—Bids have closed on several good-sized jobs previously reported, but no lettings of 100 tons or over have been closed during the week, and no fresh inquiries of importance have come up for figures. Awards are expected to be made shortly by the Lemon Grove & Spring Valley Irrigation District, La Mesa, Cal., on 500 tons for a pipe line, and also by the Southern California Edison Co., Los Angeles, on 7750 tons for a pipe line and syphons. Eastern mills quote plates at 2.30c., c.i.f. Coast ports.

Bars.—An unnamed San Francisco jobber has taken 800 tons for a wharf at the foot of University Avenue, Berkeley, Cal., for the Golden Gate Ferry Co. Bids are being taken in San Francisco on 400 tons for decking for the Carquinez Straits bridge at Crockett, Cal. Bids on 1600 to 3300 tons of concrete bars for Pier 45, to be built on the San Francisco water front by the State Board of Harbor Commissioners, have been rejected, and new bids will be closed Oct. 13. Local reinforcing bar jobbers quote domestic steel as follows: 2.30c. to 2.35c., base, per lb. on lots of 200 tons, and 2.40c. to 2.50c., base per lb. on smaller lots.

Cast Iron Pipe.—The United States Cast Iron Pipe & Foundry Co. has been awarded 291 tons of 4, 6 and 8-in. Class C pipe for street improvements by the city of San Diego, Cal. The American Cast Iron Pipe Co. is understood to have taken 421 tons of 6, 8, 10 and 12-in. Class B pipe for a pipe line for the city of Yakima, Wash. Bids will be closed Oct. 19 on 552 tons of 8-in. Class B pipe by the Bolinas Public Utility District, Bolinas, Cal. The South San Francisco Water Co. is inquiring for 420 tons of 18-in. Class B pipe. Quotations are unchanged at $50 base, water shipment, San Francisco. The city of San Diego, Cal., will close bids Oct. 18 on 114 tons of 4 and 6-in. Class B pipe for Rolando Unit No. 1.

Steel Pipe.—The Standard Oil Co. of California, San Francisco, recently placed 1600 tons of standard line pipe with unnamed Eastern producers, and it has yet to place 200 tons.

Warehouse Business.—While individual orders continue small, the aggregate amount of material taken from stock is fairly substantial. Quotations are unchanged.

Coke.—Local buyers are well supplied or have covered on their fourth quarter requirements. Little large buying is expected to develop until importers open their books for the first quarter of next year. German by-products coke is quoted at about $12 to $12.50 per net ton at incoming dock.

Old Material.—Sales of scrap during the first three quarters of this year were substantially larger than for the corresponding period of 1925. Fourth quarter bookings have been fairly large, and additional business is expected to be closed before the end of this month. Heavy melting steel is quoted at $10 to $10.50 per gross ton at consumers' yards.

Warehouse Prices, f.o.b. San Francisco

	Base per Lb.
Plates and structural shapes	3.30c.
Mild steel bars and small angles	3.30c.
Small channels and tees, ¾-in. to 2¾-in.	3.90c.
Spring steel, ¼-in. and thicker	5.00c.
No. 24 black sheets	4.90c.
No. 28 black sheets	5.15c.
No. 10 blue annealed sheets	4.00c.
No. 24 galvanized sheets	5.65c.
No. 28 galvanized sheets	6.15c.
Common wire nails, base per keg	$3.75
Cement coated nails, 100-lb. keg	3.75
Cement coated nails, count kegs	3.00

Buffalo

More Inquiry for Pig Iron—Water Shipments Adversely Affect Scrap

BUFFALO, Oct. 11.—Heavier inquiry for pig iron features the market this week, with about 10,000 tons in all before makers. The Worthington Pump & Machinery Corporation, New York, seeks 3500 tons for delivery through the last and first quarters, and a foundry in the central part of the State wants 3000 tons for the first quarter. The 3000 tons on inquiry from Danville, Pa., noted last week, is said to have been placed, but not with a Buffalo furnace. The inquiry for 2000 tons from the Kensington-Davis foundry, Buffalo, is reported to have been placed in part. Several inquiries for 1000 tons each, as well as a 2000 ton-lot of foundry and malleable for last and first quarter deliveries, are now before the trade. Furnaces are reported to be adhering to $20, base Buffalo, for shipments in this district and to $19, base, for Eastern delivery. In the East, however, stiff competition from the Troy and Charlotte furnaces is being encountered. Shipments are heavy and furnace operations unchanged.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

No. 2 plain fdy., sil. 1.75 to 2.25	$19.00 to $20.00
No. 2X foundry, sil. 2.25 to 2.75	19.50 to 20.50
No. 1X foundry, sil. 2.75 to 3.25	20.50 to 21.50
Malleable, sil. up to 2.25	20.00
Basic	19.00
Lake Superior charcoal	27.28

Finished Iron and Steel.—General specifications to mills are very good, and new business is being placed in considerable volume. Mill operations continue at around 85 per cent. Bars are active at 2.365c. and 2.265c., Buffalo, and shapes are strong at 2.265c. Plates

Warehouse Prices, f.o.b. Buffalo

	Base per Lb.
Plates and structural shapes	3.40c.
Mild steel bars	3.30c.
Cold-finished shapes	4.45c.
Rounds	3.95c.
No. 24 black sheets	4.30c.
No. 10 blue annealed sheets	3.80c.
No. 24 galvanized sheets	5.15c.
Common wire nails, base per keg	$3.90
Black wire, base per 100 lb	3.90

are quoted at 2.165c., Buffalo. Sheet bookings are very good, with mill operations steady. The city of Buffalo will ask for bids soon on the Texas sewer, requiring 500 tons of reinforcing bars. Business in wire and wire products is excellent, and warehouse trade is active.

Old Material.—The market is quiet, with no new buying of heavy melting steel scrap reported. One of the large mills which ordinarily buys small lots almost constantly, is completely out of the market, having received shipments on a recent large purchase of scrap at Detroit. The demand for stove plate and cast scrap has dropped off, following withdrawal from the market by the largest consumer of stove plate. Several railroad lists closed at the end of the week, but a very small proportion of the tonnage sold will come to Buffalo. Heavy melting steel now ranges from $17.25 to $17.75 for No. 1 select grade, but that quotation is strictly a nominal one. A sizable tonnage could not be had at less than $17 to $17.50. Mill consumption is still high and at the present rate of consumption, a buying movement is expected to develop soon. Blast furnace scrap is not showing any activity, since the one consumer is out of the market.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel	$15.50 to $16.00
Selected No. 1 heavy melting steel	17.25 to 17.75
Low phosphorus	18.50 to 19.00
No. 1 railroad wrought	15.00 to 15.50
Carwheels	17.00 to 17.50
Machine shop turnings	10.50 to 10.75
Mixed borings and turnings	12.00 to 12.50
Cast iron borings	12.00 to 12.50
No. 1 busheling	15.50 to 16.50
Stove plate	15.00 to 15.25
Grate bars	13.00 to 13.50
Hand bundled sheets	10.50 to 11.50
Hydraulic compressed	14.50 to 15.00
No. 1 machinery cast	16.00 to 16.25
Railroad malleable	16.50 to 17.00
Iron axles	24.00 to 25.00
Steel axles	16.00 to 16.50
Drop forge flashings	13.75 to 14.25

Birmingham

Larger Melters Delay Buying Full Pig Iron Requirements

BIRMINGHAM, Oct. 11.—Pig iron sales have been in fair volume during the first two weeks since the reduction in the base price and furnace interests are confident that there will be an outlet for their probable make in the last quarter, as well as a large portion of their surplus stock. The larger melters, although they have placed some tonnage, are expected to make further purchases against probable needs before the end of the year. The $20 per ton base, No. 2 foundry, will be maintained through the remainder of the year. No sales for first quarter have been reported, and no price base for that period has been announced. The Sloss-Sheffield Steel & Iron Co. plans to keep four furnaces on foundry iron indefinitely. The No. 2 City furnace will be blown out, and its blowing machinery will be transferred to a new furnace when the No. 3 furnace at North Birmingham has been relined and repaired. It will take 60 days to get the new furnace ready when the work of placing equipment from the old furnace starts. The Republic Iron & Steel Co. contemplates improvements at its blast furnace group here. At present two out of its three furnaces are in blast. The Tennessee Coal, Iron & Railroad Co. continues to take basic iron from one of the stacks of the Woodward Iron Co., which, however, has three furnaces on foundry and another furnace under repairs. The Tennessee and Central Iron & Coal companies have one furnace each producing foundry iron. Larger melters of pig iron are postponing the purchase of their full requirements so that they may take advantage of any further reduction in prices.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil	$20.00
No. 1 foundry, 2.25 to 2.75 sil	20.50
Basic	20.00
Charcoal, warm blast	30.00

Rolled Steel.—New business is in good volume, particularly from the railroads, for deliveries running into 1927. The rail mill of Tennessee Coal, Iron & Railroad Co. at Ensley still has a large tonnage to deliver this year. Other forms of steel are in splendid demand. The plants of the Tennessee Coal, Iron & Railroad Co. and the American Steel & Wire Co., subsidiaries of the United States Steel Corporation, are expected to continue to operate at a good rate through the remainder of the year. Quotations show little, if any, change. Structural shapes and bars remain at 2.15c. to 2.25c., base Birmingham, plates at 2.05c. to 2.15c., No. 10 blue annealed sheets at 2.60c. to 2.70c., No. 24 black sheets at 3.30c. to 3.40c. and No. 24 galvanized at 4.20c. to 4.30c.

Cast Iron Pipe.—The fact that pressure pipe manufacturers have purchased pig iron rather liberally, although not to the extent of their expected melt, is regarded as an indication of good prospects in the pipe market. New business in pipe has not been coming in as freely as several weeks ago, but order books warrant the steady operation of shops. Shipments are heavy, and no stocks are being accumulated. Quotations remain as during the past few weeks, i.e. $39 to $40, Birmingham, on 6-in. and larger sizes. Trade in soil pipe is still somewhat quiet, with output below normal.

Coke.—With all by-product coke works of the district in full operation and with independent producers carrying little, if any, stock, the coke market is strong. There is an increasing use of coke as a domestic fuel. Quotations are unchanged at $5.50 to $6, Birmingham, on foundry coke, the latter price being for spot shipments.

Old Material.—Sales have been heavier, but quotations remain low. The aggregate tonnage of old material booked in the last three weeks is greater than for several weeks previous. Sales of heavy melting steel have been in good volume, and cast scrap has been in heavier demand. During the long lull in buying, much old material accumulated in the field and dealers are now encouraging the bringing in of this stock. Railroads also have much old material to offer.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical	$15.00 to $16.00
Heavy melting steel	12.00 to 13.00
Railroad wrought	12.00 to 13.00
Steel axles	17.00 to 18.00
Iron axles	17.00 to 18.00
Steel rails	13.00 to 14.00
No. 1 cast	16.50 to 17.00
Tramcar wheels	16.00 to 17.00
Carwheels	16.00 to 16.50
Stove plate	14.00 to 14.50
Machine shop turnings	7.50 to 8.00
Cast iron borings	7.50 to 8.00
Rails for rolling	15.00 to 16.00

Scrap Weak at Detroit

DETROIT, Oct. 11.—While no further declines in prices were registered during the past week, the market on old material lacks firmness. Melters are carrying very low inventories on pig iron especially, with the result that shipping schedules for the month are heavy and equal to those of September.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	$12.50 to $13.00
Boring and short turnings	9.00 to 9.50
Long turnings	8.75 to 9.25
No. 1 machinery cast	17.00 to 18.00
Automobile cast	20.50 to 21.50
Hydraulic compressed	12.00 to 12.50
Stove plate	13.50 to 14.50
No. 1 busheling	11.00 to 11.50
Sheet clippings	8.00 to 8.50
Flashings	10.75 to 11.25

Boston

Pig Iron Prices Are Steadier—Steel Scrap More Active

BOSTON, Oct. 11.—Pig iron prices generally are firm. Two New York producers which heretofore have quoted low prices are holding to $20, base furnace, with regular differentials. Buffalo iron appears to be pegged at $19, base furnace, while eastern Pennsylvania iron at less than $21.50, base furnace, appears to have disappeared. Western Pennsylvania furnaces are securing prices equivalent to the delivered prices on iron from Buffalo, and Alabama producers are holding firmly to prices recently put into effect. A New York State furnace is reported to have shaded prices on a part of 2000 tons of No. 2X and No. 1X bought by a Providence, R. I., foundry, while another Eastern furnace is reported to have taken a part of the business at less than $23.75 a ton, delivered, for No. 2X. Otherwise business booked the past week by the last named furnace was on a basis of about 50c. a ton higher. Current buying is confined to small lots, mostly for mixture purposes and for delivery late this year or early next. The Worthington Pump & Machinery Corporation is in the market for 3200 tons for delivery from December to March. Of this amount 410 tons of three grades is wanted for the Cambridge, Mass., plant, 380 tons of six grades for the Holyoke, Mass., plant, 1760 tons for the New Jersey works and 650 tons for the Buffalo subsidiaries.

We quote delivered prices on the basis of the latest sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia, and $9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25	$25.15
East. Penn., sil. 2.25 to 2.75	25.65
Buffalo, sil. 1.75 to 2.25	$23.41 to 23.91
Buffalo, sil. 2.25 to 2.75	23.91 to 24.41
Virginia, sil. 1.75 to 2.25	27.92 to 28.42
Virginia, sil. 2.25 to 2.75	28.42 to 28.92
Alabama, sil. 1.75 to 2.25	29.60
Alabama, sil. 2.25 to 2.75	30.10

Plates and Shapes.—No large fabricating jobs came into the market the past week, but the number calling for less than 100 tons each is unusually large for this time of the year. The market for standard shapes holds firm at 2c., base Pittsburgh, with bookings rather limited while specifications against contracts are fair. The plate market is moderately active at 1.90c., base Pittsburgh. It is said competition among boiler makers is exceptionally keen, with the result that they are purchasing plates in conservative quantities.

Cast Iron Pipe.—The 1000 tons 24-in. pipe for the Gloucester, Mass., sewer outfall, bids for which closed Sept. 27, has not been let. Attleboro, Mass., will open bids Oct. 15 for 100 tons of 6-in. pipe. This is the only open municipal business which has come into the market during the past two weeks. Pipe companies are continuing to have a good private business, however, and are reported to be booked up on small sizes into the new year. The market for large pipe is still unsettled, it being possible to secure concessions. A few of the New England gas companies have contracted for fill-in lots for 1926. Prices quoted openly on pipe are: 4-in., $60.10 per net ton, delivered common Boston freight rate points; 6 to 12-in., $55.10 to $56.10; larger pipe, $54.10 to $55.10. The usual $5 differential is asked on Class A and gas pipe.

Imports.—Imports of pig iron at this port for September aggregated 2805 tons, of which 1321 tons came direct from Germany, and 1484 tons either from Rotterdam or Antwerp. August imports were 6347 tons, and those for September, last year, 6747 tons. Receipts of foreign iron for the nine months ended with September totaled 52,352 tons, which compares with 73,455 tons for the corresponding period last year.

Coke.—Further increases in specifications against last half by-product foundry coke contracts are reported by the New England Coal & Coke Co. and the Providence Gas Co. They are doing business at $12 a ton, delivered, within a $3.10 freight rate zone. Indications point strongly to a still larger movement of fuel from New England ovens during the remainder of this month, at least. Stove foundries, heretofore operating somewhat slack, are experiencing a seasonal pickup in business; textile machinery makers are busier, although not active; while jobbing foundries are gradually getting out of the four-day week class into the five, and there are more operating six days than for several months. Most foundries have been ordering coke in a hand-to-mouth way but are now disposed to stock up a little.

Old Material.—One local house moved more heavy melting steel the past week than it did in any similar period in the past five months, and a majority of the others report a more active market. Most material bought recently was at $11 to $11.50 a ton, on cars shipping point, with a majority of transactions at or close to $11. More life is also noted in chemical borings, with sales at as high as $11.75 a ton. Mixed borings and turnings are selling generally at $8 to $8.50 a ton, with an occasional lot at $8.60. The market for short bundles of cotton ties appears firmer. Long bundles are quoted higher, but there is little demand for them. Stove plate has been sold at $8.60, on cars, for eastern Pennsylvania delivery. New England foundries are still able to supply their machinery cast requirements from local or nearby yards. Consequently the Boston market for this material is practically at a standstill.

The following prices are for gross-ton lots delivered consuming points:

Textile cast	$18.50 to $19.00
No. 1 machinery cast	18.50 to 19.00
No. 2 machinery cast	16.50 to 17.00
Stove plate	14.00 to 14.50
Railroad malleable	19.50 to 20.00

The following prices are offered per gross-ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$11.00 to $11.50
No. 1 railroad wrought	12.00 to 12.50
No. 1 yard wrought	11.00 to 11.50
Wrought pipe (1 in. in diameter, over 2 ft. long)	10.50 to 11.00
Machine shop turnings	8.00 to 8.50
Cast iron borings, chemical	11.00 to 11.75
Cast iron borings, rolling mill	8.00 to 8.60
Blast furnace borings and turnings	8.00 to 8.60
Forged scrap	9.00 to 9.50
Bundled skeleton, long	8.50 to 9.00
Forged flashings	9.00 to 9.50
Bundled cotton ties, long	8.50 to 9.00
Bundled cotton ties, short	9.00 to 9.50
Shafting	16.50 to 17.00
Street car axles	16.50
Rails for rerolling	12.00
Scrap rails	11.00 to 11.50

Warehouse Prices, f.o.b. Boston

	Base per Lb.
Soft steel bars and small shapes	3.265c.
Flats, hot-rolled	4.15c.
Reinforcing bars	3.265c. to 3.54c.
Iron bars—	
Refined	3.265c.
Best refined	4.60c.
Norway, rounds	6.60c.
Norway, squares and flats	7.10c.
Structural shapes—	
Angles and beams	3.365c.
Tees	3.365c.
Zees	3.465c.
Plates	3.365c.
Spring steel—	
Open-hearth	5.00c. to 10.00c.
Crucible	12.00c.
Tire steel	4.50c. to 4.75c.
Bands	4.015c. to 5.00c.
Hoop steel	5.50c. to 6.00c.
Cold-rolled steel—	
Rounds and hexagons	4.05c.
Squares and flats	4.55c.
Toe calk steel	6.00c.

St. Louis

Pig Iron Prices Weaker—Wabash Buys 18,000 Tons of Rails

ST. LOUIS, Oct. 11.—Two recent declines of 50c. a ton each in Southern pig iron, bringing prices down to a basis of $20, Birmingham, indicate that Alabama furnaces are looking for orders. Chicago producers are quoting nominally $21, f.o.b. furnace, for Northern iron, but sales are being made in this territory at $1 less than that figure. The Granite City maker is still openly quoting $22 to $22.50, f.o.b. furnace, but is understood to be meeting Chicago competition. Sales

were light during the last week. The local maker booked orders for upward of 1000 tons, one being for 350 tons. The only important inquiry is for 1000 tons of malleable for an upper Illinois melter. St. Louis' only world series baseball games in 38 years have received the main attention of buyers and sellers in all lines to the detriment of business.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices, $2.16 freight from Chicago, $4.42 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25...	$23.16
Northern malleable, sil. 1.75 to 2.25	23.16
Basic	23.16
Southern fdy., sil. 1.75 to 2.25...	24.42
Granite City iron, sil. 1.75 to 2.25	$22.81 to 23.31

Finished Iron and Steel.—Rail and track fastening business occupies the spotlight here. The Wabash Railway has bought 18,000 tons of 110-lb. rails, 7500 tons each going to the Illinois Steel Co. and Inland Steel Co. and 3000 tons to Bethlehem Steel Co. The Missouri Pacific Railroad is in the market for 30,000 tons of 85 to 90-lb. rails, and from 2,500,000 to 5,000,000 tie plates, in themselves accounting for 15,000 to 30,000 tons. Business is quiet in reinforcing bars and structural steel. Interest in tank plates is increasing. Warehouse business has slowed up a little.

Coke.—By-product ovens report that there is still a good demand for foundry grades of coke, not only locally but from other sections. Prices continue firm. There is an increasing demand for domestic grades, especially from Northern sections on account of the cooler weather.

Old Material.—Railroad offerings of old material slowed up this week, but that did not help the market, because there is practically no buying by consumers. The whole list is weak, and prices on some items have declined 25 to 50c. a ton. Until there is buying by consumers, further weakness and still lower prices are looked for. Dealers are not buying except at bargain prices. New railroad lists include: Santa Fe Lines, 5300 tons; Great Northern, 4800 tons; Mobile & Ohio, 750 tons; Chicago & Eastern Illinois, 500 tons; Pullman Co. (St. Louis), 350 tons; and Chicago, Milwaukee & St. Paul, 150 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails	$11.00 to $11.50
Rails for rolling	16.25 to 16.75
Steel rails less than 3 ft.	16.50 to 17.00
Relaying rails, 60 lb. and under	20.50 to 23.50
Relaying rails, 70 lb. and over	26.50 to 29.00
Cast iron carwheels	15.25 to 15.75
Heavy melting steel	13.25 to 13.75
Heavy shoveling steel	13.25 to 13.75
Frogs, switches and guards cut apart	15.00 to 15.50
Railroad springs	17.50 to 18.00
Heavy axle and tire turnings	11.00 to 11.50
No. 1 locomotive tires	16.00 to 16.50
Per Net Ton	
Steel angle bars	12.50 to 13.00
Steel car axles	18.00 to 18.50
Iron car axles	21.00 to 21.50
Wrought iron bars and transoms	18.50 to 19.00
No. 1 railroad wrought	12.00 to 12.50
No. 2 railroad wrought	11.75 to 12.25
Cast iron borings	9.50 to 10.00
No. 1 busheling	10.25 to 10.75
No. 1 railroad cast	14.75 to 15.25
No. 1 machinery cast	17.00 to 17.50
Railroad malleable	13.00 to 13.25
Machine shop turnings	7.00 to 7.50
Bundled sheets	7.50 to 8.00

Warehouse Prices, f.o.b. St. Louis

	Base per Lb.
Plates and structural shapes	3.25c.
Bars, mild steel or iron	3.15c.
Cold-finished rounds, shafting and screw stock	3.75c.
No. 24 black sheets	4.45c.
No. 10 blue annealed sheets	3.60c.
No. 24 galvanized sheets	5.25c.
Black corrugated sheets	4.65c.
Galvanized corrugated sheets	5.30c.
Structural rivets	3.65c.
Boiler rivets	3.85c.
	Per Cent Off List
Tank rivets, ⅞-in. and smaller	70
Machine bolts	50 and 5
Carriage bolts	47½
Lag screws	55 and 5
Hot-pressed nuts, square, blank or tapped	3.25c. off per lb.
Hot-pressed nuts, hexagons, blank or tapped	3.75c. off per lb.

Cincinnati

Liberal Pig Iron Specifications—Scrap Declines 50c.

CINCINNATI, Oct. 11.—Despite the fact that fresh bookings in the past week were unimportant, conditions in the local pig iron market are satisfactory both from the standpoint of production and consumption. Melters are specifying liberally against fourth quarter contracts and, in many cases, rush deliveries have been requested. Southern Ohio foundry iron is commanding $20, base Ironton, in this and nearby cities, but a concession of 50c. a ton still can be had on attractive tonnages in territory up-State where severe competition from Lake and Valley furnaces is encountered. A similar situation in malleable iron has brought out quotations of from $19 to $19.50, base furnace, in central and northern Ohio, whereas the price in southern Ohio is $20. Small quantities of Southern iron have been sold in the territory north of the Ohio River at $20, base Birmingham. Alabama producers, however, are unwilling to book orders for next year at that figure. Large bookings in the South recently have given a stronger tone to the market there, and there is talk of a possible advance on first quarter iron. Tennessee iron is available at $20, base Birmingham, although $20.50 is being asked for prompt shipment. The silvery iron market is steady, but sales have been confined to single carloads. The Columbia Sanitary Mfg. Co., Louisville, has bought 1500 tons of Southern and Northern iron. Aside from an inquiry for 500 tons of malleable from a Huntington, W. Va., user, prospective business is negligible. Announcement has been made of an impending advance of 1c. a ton on pig iron shipped from Jackson and Ironton, Ohio, to Cincinnati. A new freight rate, effective Nov. 1, will be $1.90 instead of $1.89, as at present.

Based on freight rates of $2.69 from Birmingham and $1.89 from Ironton, we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25 (base)	$23.69
Alabama fdy., sil. 2.25 to 2.75	24.19
Tennessee fdy., sil. 1.75 to 2.25	23.69
Southern Ohio silvery, 8 per cent	29.39
So. Ohio fdy., sil. 1.75 to 2.25	$21.39 to 21.89
So. Ohio malleable	20.89

Finished Material.—The first week of the fourth quarter has brought out only a moderate volume of specifications and orders. Bookings in the last few days of September were so heavy that the decreased buying in the first part of October was anticipated by producers. With little prospect of an increase in prices during the remainder of the year, and with mills supplying fairly prompt deliveries of material, there is no incentive for consumers to accumulate stocks except for immediate needs. Fabricators are taking their contract requirements at a steady rate. The sheet market continues to show strength, despite the fact that fresh orders have fallen off somewhat in the past week. The roofing season is running later than usual this year, and mills still are rushing shipments of galvanized sheets to users. Quotations on galvanized and black sheets have been firmly established at 3.95c. and 3.10c., base Pittsburgh, respectively, the old prices practically having disappeared. Demand for blue annealed sheets has been consistently good, and prices are steady at 2.40c., base Pittsburgh. Automobile body sheets are moving slowly and are bringing 4.25c., base Pittsburgh, for No. 20 gage. Inquiries for bars from agricultural implement manufacturers have been encouraging. Bar sales have been only fair. Structural shapes have been moving at a consistently good rate. Tank plates are holding well at 1.90c., base Pittsburgh. Specifications and orders for wire products are increasing slowly. Common wire nails remain at $2.65 per keg, base Ironton, and plain wire at $2.50 per 100 lb., base Ironton. Sales of fencing material have taken an upward turn in the past two weeks. The Louisville & Nashville Railroad is inquiring for 500 tons of plates.

Reinforcing Bars.—There have been no awards of consequence, but several important pending jobs probably will be let in the next week. New billet bars are

Warehouse Prices, f.o.b. Cincinnati

	Base per Lb.
Plates and structural shapes	3.40c.
Bars, mild steel or iron	3.20c. to 3.30c.
Reinforcing bars	3.20c. to 3.30c.
Hoops	4.00c. to 4.25c.
Bands	3.95c.
Cold-finished rounds and hexagons	3.85c.
Squares	4.35c.
Open-hearth spring steel	4.75c. to 5.00c.
No. 24 black sheets	4.05c.
No. 10 blue annealed sheets	3.60c.
No. 24 galvanized sheets	4.90c.
Structural rivets	3.75c.
Small rivets	65 per cent off list
No. 9 annealed wire, per 100 lb	$3.00
Common wire nails, base per keg	2.95
Cement coated nails, base per 100-lb. keg	3.15
Chain, per 100 lb	7.55
	Net per 100 Ft.
Lap welded steel boiler tubes, 2-in	$18.00
4-in.	38.00
Seamless steel boiler tubes, 2-in	19.00
4-in.	39.00

quoted at 2c., base Pittsburgh, and rail steel bars at 1.90c., base mill.

Warehouse Business.—Sales have increased considerably in the past week, the improvement being reflected principally in structural steel and reinforcing bars. The betterment is attributed partly to the desire of builders to complete outdoor construction programs before cold weather sets in. Prices on all commodities are unchanged.

Coke.—Sales both of foundry and domestic coke have been large. A local dealer has sold 10,000 tons of beehive foundry coke, while a Jackson, Ohio, blast furnace is expected to purchase its requirements for the next year, which are estimated at 6000 tons a month. Although the Portsmouth By-Products Coke Co. is offering by-product foundry coke at $7, ovens, during October, it is reported that the old schedule of $7.50, or $9.64, delivered Cincinnati, will be restored next month. Other sellers in this territory are on the latter basis at present. The idleness of one of the Ironton merchant pig iron furnaces during the past three weeks has thrown considerable furnace coke on the market, but it is being absorbed at a fairly good rate.

Old Material.—A reduction in the operations of steel plants in this district, and an accumulation by consumers of sufficient stock to meet their needs in the near future have had a weakening effect upon the market. As a result, prices of almost all items, including heavy melting steel, have declined 50c. a ton. Among the railroad lists closing in the next 10 days are the following: Norfolk & Western, 4200 tons; Wabash, 540 tons; Seaboard Air Line, 7500 tons; Chesapeake & Ohio, 9000 tons; Louisville & Nashville, 9770 tons; Southern, 8200 tons; Central of Georgia, 1475 tons. Included in the above tonnage are approximately 8500 tons of steel rails.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

	Per Gross Ton	
Heavy melting steel	$13.00 to	$13.50
Scrap rails for melting	13.00 to	13.50
Short rails	18.00 to	18.50
Relaying rails	26.50 to	27.00
Rails for rolling	14.00 to	14.50
Old carwheels	12.50 to	13.00
No. 1 locomotive tires	17.00 to	17.50
Railroad malleable	14.50 to	15.00
Agricultural malleable	13.50 to	14.00
Loose sheet clippings	7.50 to	8.00
Champion bundled sheets	9.00 to	9.50
	Per Net Ton	
Cast iron borings	7.00 to	7.50
Machine shop turnings	6.50 to	7.00
No. 1 machinery cast	17.50 to	18.50
No. 1 railroad cast	14.50 to	15.00
Iron axles	20.00 to	20.50
No. 1 railroad wrought	9.50 to	10.00
Pipes and flues	8.00 to	8.50
No. 1 busheling	9.50 to	10.00
Mixed busheling	6.00 to	6.50
Burnt cast	7.00 to	7.50
Stove plate	9.50 to	10.00
Brake shoes	10.00 to	10.50

The new blast furnace of the Central Alloy Steel Corporation, Massillon, Ohio, has been scheduled to be placed in operation Oct. 28. Several weeks ago Sept. 23 was set as the date for starting this furnace, but lighting of the stack was delayed.

RAILROAD EQUIPMENT

Chicago & North Western Orders 500 Stock Car Bodies—Other Business Unimportant

The week brought no railroad equipment buying of importance. The Chicago & North Western ordered 500 stock car bodies and a few other small orders were placed. The Baltimore & Ohio is inquiring for 25 locomotives.

Railroad locomotives shipped from American plants in September totaled 134 as compared with 124 in August and 100 in September, 1925, according to a report just issued by the Department of Commerce, Washington.

Locomotives in need of repair on Sept. 15, according to the Car Service Division, American Railway Association, numbered 9386 or 15 per cent of the number on line. This was an increase of 355 over the number in need of repair on Sept. 1.

The Long Island Railroad has made inquiry for 60 motor-passenger coaches, 30 trailer-passenger coaches and 20 steam passenger coaches, and is reported to be in the market for three oil-burning locomotives and five caboose cars.

The Chicago & North Western has inquired for 100 flat cars, and has placed 500 stock car bodies with the Illinois Car & Mfg. Co. A similar order was placed last June.

The Cities Service Tank Line has placed 30 tank cars with the American Car & Foundry Co.

The Empire Refining Co. has placed 30 tank cars with the American Car & Foundry Co.

The Baltimore & Ohio will take prices on 25 Mountain type locomotives.

Foreign Sheet Steel Piling to Take Duty as Structural Material

WASHINGTON, Oct. 11.—Sustaining a protest of R. G. Frank, New York, the United States Customs Court has just handed down an opinion holding that steel sheet piling and steel corner piles, ready as imported for immediate use in the construction of buildings, etc., are properly dutiable under Paragraph 312 of the Fordney-McCumber Tariff Act as "structural shapes of . . . steel" piling at the rate of one-fifth of 1c. per pound as not having been advanced beyond rolling, and the corner piles at the rate of 20 per cent ad valorem as having been advanced beyond rolling.

The collector of customs at New York had assessed a duty on the piling of one-half of 1c. per pound under paragraph 304 as steel not specially provided for, valued above 1½c. but not above 2½c. per pound, and on the corner piles at 40 per cent ad valorem under paragraph 399 of the present tariff law as manufactures of metal specially provided for.

Physical examination of a prospective employee in industry should be conducted in a way that will fit the workman to a suitable job, but it should also give information that will aid the company in maintaining the employee's health, so that he may continue on his job effectively. This point is brought out in "Physical Examinations in Industry," a recent booklet of the Metropolitan Life Insurance Co., New York, and No. 2 of its industrial health series. The publication deals with the purposes of physical examinations, their cost and the manner in which they are conducted and provides copies of blanks used by large industrial concerns which have proved satisfactory. Proposed layouts of physical examination rooms are furnished and a list of the apparatus and equipment needed. There is also a discussion of periodic examinations of employees, which is the practice of a number of large employers.

NON-FERROUS METAL MARKETS

The Week's Prices

Cents per Pound for Early Delivery

	Oct. 11	Oct. 9	Oct. 8	Oct. 7	Oct. 6
Lake copper, New York	14.25	14.25	14.25	14.25	14.37½
Electrolytic copper, N. Y.*	13.87½	13.87½	13.87½	13.87½	14.00
Straits tin, spot, New York	70.50	....	71.00	71.50	71.75
Lead, New York	8.20	8.20	8.20	8.20	8.20
Lead, St. Louis	8.50	8.50	8.50	8.50	8.50
Zinc, New York	7.67½	7.65	7.65	7.67½	7.67½
Zinc, St. Louis	7.32½	7.30	7.30	7.32½	7.32½

*Refinery quotation; delivered price ¼c. higher.

NEW YORK, Oct. 11.—Copper is dull and lower. The tin market is still strong but not very active. Lead prices have been again reduced. Zinc is a little stronger, due to favorable statistics. All the markets are quiet today, due partly to the holiday tomorrow.

Copper.—The week has been inactive and featureless. Prices have gradually sagged, due to lack of interest by consumers and no pressure to sell by producers. The net decline in electrolytic copper has been ⅛c. per lb. Most producers are now asking 14.12½c., delivered. Sales during the week have been only moderate. Today inquiry is a little more active, but consumers are holding off. It is generally conceded that they must still buy considerable metal for November-December delivery, as their order books are reported in good condition. Lake copper is quoted at 14.25c., delivered.

Tin.—The market is dull and quieter than in recent weeks. For the most part consumers remain indifferent and dealers are not particularly active. It is quite evident, however, that consumers must buy considerable tin for November-December delivery. For the week ended Saturday, Oct. 9, totals sales were estimated at about 750 tons. The most active day was Friday, Oct. 8, when 250 tons changed hands, the market closing quiet on that day. Considerable doubt is expressed as to the future of the tin market. Speculative and other conditions may be such as to cause an advance, and poor business or a reaction in the stock market might have the opposite effect. One thing is regarded as certain—a shortage of tin for the rest of the year. Spot Straits tin today was quoted at 70.50c., New York, in a very dull market. Arrivals thus far this month have been 1565 tons, with 4931 tons reported afloat. It is interesting to note that on Oct. 6 tin sold at 71.75c., New York, the highest price reached in several years.

Lead.—Another reduction was made last week by the American Smelting & Refining Co. in its contract price of lead. On Oct. 6 quotations were lowered from 8.65c. to 8.50c., New York. Independent sellers are meeting this price with a quotation of 8.20c., St. Louis. There are plenty of such sellers eager for business and the market looks heavy. According to one authority, a decline in consumption is not improbable.

Zinc.—Favorable statistics issued today have given the market a little stronger tone. There was a reduction in stocks during September of about 2500 tons, despite a moderate increase in production. These statistics, together with a higher price in London today, have strengthened the market slightly so that prime Western zinc is quoted at 7.32½c. to 7.35c., St. Louis, or 7.67½c. to 7.70c., New York.

Antimony.—The market is stronger and Chinese metal is quoted today (Monday) at 14.75c., New York, for spot delivery, and 14.25c. for futures, which are December-January arrivals.

Nickel.—Wholesale lots of ingot nickel are quoted at 35c., with shot nickel at 36c. per lb. Electrolytic nickel is quoted at 39c.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is obtainable at 27c. per lb., delivered.

Metals from New York Warehouse

Delivered Prices per Lb.

Tin, Straits pig	72.50c. to 73.50c.
Tin, bar	74.00c. to 74.50c.
Copper, Lake	15.25c.
Copper, electrolytic	15.00c.
Copper, casting	14.50c.
Zinc, slab	8.50c. to 9.00c.
Lead, American pig	8.75c. to 9.25c.
Lead, bar	11.25c. to 12.25c.
Antimony, Asiatic	15.50c. to 16.50c.
Aluminum, No. 1 ingot for remelting (guaranteed over 99 per cent pure)	30.00c. to 30.50c.
Babbitt metal, commercial grade	30.00c. to 40.00c.
Solder, ½ and ½	43.00c. to 44.00c.

Metals from Cleveland Warehouse

Delivered Prices per Lb.

Tin, Straits pig	75.50c.
Tin, bar	77.50c.
Copper, Lake	15.00c.
Copper, electrolytic	15.00c.
Copper, casting	14.00c.
Zinc, slab	8.50c.
Lead, American pig	9.35c.
Antimony, Asiatic	18.50c.
Lead, bar	11.50c.
Babbitt metal, medium grade	22.50c.
Babbitt metal, high grade	80.50c.
Solder, ½ and ½	45.00c.

Rolled Metals from New York or Cleveland Warehouse

Delivered Prices, Base per Lb.

Sheets—	
High brass	19.12½c. to 20.12½c.
Copper, hot rolled	22.75c. to 23.75c.
Copper, cold rolled, 14 oz. and heavier	25.00c. to 26.00c.
Seamless Tubes—	
Brass	24.00c. to 25.00c.
Copper	24.75c. to 25.75c.
Brazed Brass Tubes	27.12½c. to 28.12½c.
Brass Rods	16.87½c. to 17.87½c.

From New York Warehouse

Delivered Prices, Base per Lb.

Zinc sheets (No. 9), casks	13.00c. to 13.25c.
Zinc sheets, open	13.50c. to 13.75c.

Non-Ferrous Metals at Chicago

OCT. 11.—The demand for copper is off slightly and the price is easier. Tin is strong and the price has advanced while lead is quoted lower, following a reduction in the price by producers. The old metal market is quiet and prices are nominal.

We quote, in carload lots, Lake copper, 14.37½c;

Non-Ferrous Rolled Products

Mill prices on bronze, brass and copper products were reduced ¼c. on Oct. 8, after having been stationary since Aug. 3. Lead full sheets were reduced ¼c. on the same date, and are now quoted at 12.25c. to 12.50c. Zinc sheets have not changed since July 20.

On Copper and Brass Products, Freight up to 75c. Per 100 Lb. Allowed on Shipments of 500 Lb. or Over

Sheets—	
High brass	19.12½c.
Copper, hot rolled	22.75c.
Zinc	11.75c.
Lead (full sheets)	12.25c. to 12.50c.
Seamless Tubes—	
High brass	24.00c.
Copper	24.75c.
Rods—	
High brass	16.87½c.
Naval brass	19.62½c.
Wire—	
Copper	16.12½c.
High brass	19.62½c.
Copper in Rolls	21.62½c.
Brazed Brass Tubing	27.12½c.

Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of the Mississippi River and also allowed to St. Louis on shipments to destinations west of that river.

Sheets, 0 to 10 gage, 3 to 30 in. wide	37.50c.
Tubes, base	48.00c.
Machine rods	34.00c.

Rolled Metals, f.o.b. Chicago Warehouse

(Prices Cover Trucking to Customers' Doors in City Limits)

	Base per Lb.
Sheets—	
High brass	19⅝c. to 20⅝c.
Copper, hot rolled	23c.
Copper, cold rolled, 14 oz. and heavier	25¼c.
Zinc	12.25c.
Lead, wide	11.25c.
Seamless Tubes—	
Brass	24¼c.
Copper	25c.
Brazed Brass Tubes	27⅝c.
Brass Rods	17⅛c.

tin, 73.50c.; lead, 8.30c.; zinc, 7.45c.; in less than carload lots, antimony, 15.50c. On old metals we quote copper wire, crucible shapes and copper clips, 10.75c.; copper bottoms, 9.75c.; red brass, 9.25c.; yellow brass, 8c.; lead pipe, 6.75c.; zinc, 5c.; pewter, No. 1, 35c.; tin foil, 43.50c.; block tin, 52c.; aluminum, 17.75c.; all being dealers' prices for less than carload lots.

Old Metals, Per Pound, New York

The buying prices represent what large dealers are paying for miscellaneous lots from the smaller accumulators, and the selling prices are those charged consumers after the metal has been properly prepared for their uses.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, heavy crucible	11.75c.	13.25c.
Copper, heavy and wire	11.50c.	12.25c.
Copper, light and bottoms	9.50c.	10.75c.
Brass, heavy	7.25c.	8.75c.
Brass, light	6.25c.	7.75c.
Heavy machine composition	8.75c.	10.00c.
No. 1 yellow brass turnings	8.50c.	9.125c.
No. 1 red brass or composition turnings	8.25c.	9.25c.
Lead, heavy	7.00c.	7.50c.
Lead, tea	5.25c.	6.00c.
Zinc	4.25c.	4.75c.
Sheet aluminum	17.00c.	19.00c.
Cast aluminum	17.00c.	19.00c.

FABRICATED STRUCTURAL STEEL

11,500 Tons Wanted for New York Subway. 10,000 Tons for Atlantic City Building

Awards of structural steel within the week amounted to about 30,000 tons, which compares favorably with recent weeks and is higher than some. Included in 30,000 tons on which bids have been asked for is 11,500 tons for New York subways and 10,000 tons for a convention hall at Atlantic City, N. J. Awards follow:

LIVERMORE FALLS, ME., 400 tons, power house International Paper Co., to Megquier & Jones.

NEW ROCHELLE, N. Y., 100 tons, municipal building, to Easton Structural Steel Co.

NEW YORK, 3000 tons in the following jobs as reported to the Structural Steel Board of Trade: Six-story loft building, Broadway and West 133rd Street, and 14-story apartment building, 129-133 East Twenty-first Street, to Hay Foundry & Iron Works; addition to A. S. P. C. A. Building, Butler Street, Brooklyn, and addition to hospital, West Forty-third Street, to Levering & Garrigues; apartment hotel, Ninety-fifth Street and West End Avenue, distributing station, 441 West Fifty-third Street, and transmission towers, Bush Terminal, for Brooklyn Edison Co., to Hedden Iron Construction Co.

NEW YORK, 1600 tons, apartment hotel, 12-18 West Seventy-second Street, to A. E. Norton, Inc.

NEW YORK, 1500 tons, 16-story apartment building, Broadway and 102nd Street, to Drier Iron Works.

NEW YORK, 700 tons, apartment building, 433 East Fifty-seventh Street, to Easton Structural Steel Co.

NEW YORK, 300 tons, office building, Broadway and Twenty-sixth Street, to Hinkle Steel Construction Co.

FLUSHING, L. I., 100 tons, synagogue, Sanford Avenue, to Drier Iron Works.

PITTSBURGH, 1200 tons, Stanley Theater, to Jones & Laughlin Steel Corporation.

ERIE, PA., 1300 tons, New York Central station to Jones & Laughlin Steel Corporation.

YOUNGSTOWN, OHIO, 125 tons, Isaly dairy building, to Gulbert Steel Co.

YOUNGSTOWN, OHIO, 300 tons, sintering plant for Republic Iron & Steel Co., to Bollinger-Andrews Construction Co.

MANSFIELD, OHIO, 420 tons, administration building for Ohio Brass Co., to Massillon Bridge & Structural Works.

AKRON, OHIO, 1850 tons, factory building, for the Goodyear Tire & Rubber Co., to Berger Iron Works.

FLINT, MICH., 2900 tons, foundry for the Buick Motor Co., to Flint Structural Steel Co.

CHICAGO, 700 tons, addition to Armour & Co. glue works, to Hansell-Elcock Co., Chicago.

WILMETTE, ILL., 125 tons, theater, to Gage Structural Steel Co.

NORTH LITTLE ROCK, ARK., 130 tons, viaduct, to Arkansas Foundry Co., Little Rock.

CARDEN, OKLA., 170 tons, mill building, to Concrete Steel & Construction Co., Joplin, Mo.

MILWAUKEE, 300 tons, Schaetzke apartment building, to Lakeside Bridge & Steel Co.

MILWAUKEE, 250 tons, Bay View Theater, to Lakeside Bridge & Steel Co.

TUCSON, ARIZ., 320 tons, office building, to an unnamed fabricator.

SANTA BARBARA, CAL., 1400 tons, County Court House, to Llewellyn Iron Works, Los Angeles.

MERCED, CAL., 600 tons, buildings and crane runway for the Yosemite Portland Cement Co., to Western Pipe & Steel Co., San Francisco.

SAN JOSE, CAL., 125 tons, sub-station for the Pacific Gas & Electric Co., to Western Iron Works, San Francisco.

PORTLAND, ORE., 192 tons, bridge over Pistol River on the Roosevelt Coast Highway for the Oregon Highway Commission, to an unnamed fabricator.

ATLANTIC CITY, N. J., 400 tons, addition to Seaside Hotel, to American Brown, Boveri Electric Corporation.

CLEVELAND, 700 tons, addition to open-hearth plant of the Otis Steel Co., to McMyler Interstate Co.

NEW YORK CENTRAL RAILROAD, 1000 tons for bridges at Conneaut and Euclid, Ohio, and Fairview, Pa., to Fort Pitt Bridge Works.

JORDANSVILLE, N. Y., 150 tons, factory for the Mohawk Limestone Products Co., to Fort Pitt Bridge Works.

BEREA, OHIO, 430 tons, high school, to Forest City Structural Co.

FLORENCE, ILL., 2050 tons, highway bridge, to Illinois Steel Bridge Co., Jacksonville, Ill.

LA SALLE, ILL., 1575 tons, highway bridge, to Illinois Steel Bridge Co.

LOUISIANA, MO., 2300 tons, Mississippi River bridge, to Wisconsin Bridge & Iron Co.

CURRY COUNTY, ORE., 175 tons, two 160-ft. spans, to Pacific Iron Works, Portland, Ore.

OAKLAND, CAL., 1200 tons, Scottish Rite Temple, to Moore Shipbuilding & Dry Dock Co.

SONOMA COUNTY, CAL., 250 tons, two Strauss bascule bridges, to Pacific Rolling Mill Co., Los Angeles.

LOS ANGELES, 200 tons, viaduct for Pacific Electric Railway Co., to Llewellyn Iron Works.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

NEW YORK, 11,500 tons, subway section 5, route 101; for letting Oct. 29.

NEW YORK, 1800 tons, addition to Hotel Manger, Fifty-first Street and Seventh Avenue.

NEWARK, N. J., 2100 tons, New Jersey State Highway Commission.

ATLANTIC CITY, N. J., 10,000 tons, auditorium and convention hall.

BALTIMORE, 1000 tons, building for Ward Baking Co.

CHESAPEAKE & OHIO RAILWAY, 200 tons, bridges.

KALAMAZOO, MICH., 1400 tons, hospital.

GRAND RAPIDS, MICH., 400 tons, building for the Leonard Refrigeration Co.

GREEN BAY, WIS., 600 tons, steel for two hydroelectric dams for the Northern Paper Mills on Menominee River at White Rapids; bids closed Oct. 8.

ORLAND, CAL., 220 tons, gates for the Stoney Gorge dam; bids being taken.

SAN QUENTIN, CAL., 135 tons, building for San Quentin State Prison; bids in.

KLAMATH FALLS, ORE., 200 tons, theater for Pelican Theater Co.; bids being taken.

PERSONAL

Ollie Needham, recently placed in charge of steel mill engineering, Westinghouse Electric & Mfg. Co., East Pittsburgh, was born in Pottsboro, Tex., and was graduated from the Oklahoma Agricultural and Mechanical College with a Bachelor of Science degree in electrical engineering in 1909. He joined the Westinghouse organization that year and completing the apprentice course in 1911 was assigned to the motor engineering department. In 1915 he was transferred to the steel mill section, general engineering department. Mr. Needham is a member of the Association of Iron and Steel Electrical Engineers and the American Institute of Electrical Engineers and has presented papers before both associations. He also has written several articles for the technical press.

OLLIE NEEDHAM

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Stanley B. Rockwell, Stanley B. Rockwell Co., Hartford, Conn., was the guest of the Worcester, Mass., chapter, American Society for Steel Treating, last week. He gave an address on the relation of laboratory to manufacturing, illustrated by moving pictures.

—

C. E. Nelson, Stanley Works, is chairman of a committee of arrangements for an industrial exhibit to be held in New Britain, Conn., commencing Oct. 18.

—

Joseph E. McAdams, president Steel Engineering Co., Springfield, Ohio, has been elected a member of the board of directors of the City National Bank and the City Trust and Savings Bank, Dayton, Ohio.

—

Spencer Allen has been appointed manager of the scrap iron department in Cincinnati for Hickman, Williams & Co. He formerly was associated with the company's St. Louis office.

—

Leland Brooks, formerly vice-president and treasurer of the Franklin Railway Supply Co., Ltd., Montreal, has been appointed special representative of the Worthington Pump & Machinery Corporation with headquarters at Chicago. In addition to other duties Mr. Brooks will handle railroad sales in Canada.

—

G. S. Swanson has been appointed Pittsburgh district sales manager G. H. Williams Co., Erie, Pa. Mr. Swanson formerly was associated with the Beckwith Machinery Co. and the George W. Zeigler Machinery Co. in the Pittsburgh district.

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Ralph W. Clark, vice-president Pilling & Co., Inc., 11 Broadway, New York, returned on the S. S. Minnewaska, Oct. 11, from a European trip. He visited Holland, Belgium and France.

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Robert K. Berry, Berry Mfg. Co., Muscatine, Iowa, is scheduled to address a dinner meeting of the local chapter of the American Society for Steel Treating on the evening of Oct. 23 at the Davenport Chamber of Commerce, Davenport, Iowa, on the subject of heat treating of high speed steel.

—

Frank O'Harris of Canelton, W. Va., has been elected a director of the Lake Superior Corporation, Camden, N. J., of which the Algoma Steel Corporation, Sault Ste. Marie, Ont., is a subsidiary, to succeed Frederick McOwen, who has resigned. Other directors were reelected.

—

R. B. Lemay, for the past several years superintendent of blast furnaces at Sheffield, Ala., for the Sloss-Sheffield Steel & Iron Co., Birmingham, has been made assistant to J. P. Dovel, vice-president in charge of blast furnace operations for the Sloss-Sheffield company. Mr. Lemay has been with the company for 19 years.

—

W. J. Ulrich, formerly Detroit district manager for the Manning-Abrasive Co., Troy, N. Y., has been appointed Detroit district sales manager of the coated abrasive division Carborundum Co., Niagara Falls, N. Y.

—

R. C. Harvey has been appointed representative in Alabama, Florida and Georgia for the Ohio Injector Co., Wadsworth, Ohio, with headquarters in Atlanta.

—

George R. Hanks, vice-president of the Taylor-Wharton Iron & Steel Co., Highbridge, N. J., has been elected vice-president of the Tioga Steel & Iron Co. and the Philadelphia Roll & Machine Co., both of Philadelphia, to succeed Alfred Crook, who has resigned.

—

R. E. Zahniser, who has been with the Jones & Laughlin Steel Corporation in its general offices at Pittsburgh for 15 years, the last seven in the tin plate sales department, has been transferred to the New York office, where he will handle tin plate sales.

—

W. B. Flanders, formerly engineer large turbine division, engineering department, was appointed assistant manager of engineering in the reorganization of the engineering department of the South Philadelphia Works, Westinghouse Electric & Mfg. Co. R. C. Allen, formerly assistant to chief engineer, has been appointed manager of large turbine engineering. J. A. MacMurchy, formerly engineer small turbine division, engineering department, has been appointed manager small turbine engineering, D. W. R. Morgan, formerly engineer, condenser division, has been appointed manager condenser and internal combustion engineering.

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Warren R. Tyson, who for six years was sales manager of the Tioga Steel & Iron Co. and also of the Philadelphia Roll & Machine Co., both of Philadelphia, has been made general manager of all activities and operations of both of these companies, effective Oct. 1. Prior to his connection with the Tioga Steel & Iron Co., Mr. Tyson was for eight years in the sales department of the Bethlehem Steel Co. He entered the shipping department of the Tioga company in 1910 and since that time has filled positions in practically every department of the company's plant and sales organization.

WARREN R. TYSON

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Norman C. Chambers formerly associated with the Niles-Bement-Pond Co., New York, is now representing the Chicago Pneumatic Tool Co., New York, in Moscow, Russia.

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John A. Needy, formerly a member of the engineering faculty at Purdue University, Lafayette, Ind., has been appointed dean of the college of engineering at Ohio Northern University, Ada, Ohio.

John McGeorge, at one time chief engineer for the Wellman-Seaver-Morgan Co., Cleveland, and more recently plant engineer for the General Motors Oakland-Pontiac plant, Pontiac, Mich., has been placed in charge of the oven and conveyor engineering department of the McCann-Harrison Corporation, Cleveland.

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Milton C. Stuart, who has been professor of mechanical and marine engineering at the post graduate school of the United States Naval Academy, Annapolis, Md., has resigned to become professor of experimental engineering at Lehigh University, Bethlehem, Pa.

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Edward H. Cheney has been appointed sales manager of the Wagner Electric Corporation, St. Louis, succeeding Thomas T. Richards, who resigned Oct. 1. Mr. Cheney has been with the Wagner corporation since 1905, when he became Chicago office manager. In 1909 he was made Chicago district manager, which position he held until his appointment as sales manager. After graduating from the University of Michigan in 1892, with the degree B.S.E.E., he entered the employ of the Chicago Edison Co., being in charge of the drafting, machinery sales and contracting departments. Shortly after he became president of the Mutual Electric Corporation, Chicago, and in 1895 president of the Station Equipment Co., Chicago, furnisher of complete central station apparatus. From 1898 until 1901 he served as president of the Illinois Maintenance Co., a subsidiary of the Chicago Edison Co. In 1901 he went into consulting engineering work as president of the Fuel Engineering Co., Chicago, which position he held until going with the Wagner corporation.

EDWARD H. CHENEY

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D. S. Ratliff, formerly general superintendent, Wilson & Bennett Mfg. Co., Chicago, has been appointed manager of the new plant being erected at Alameda, Cal., by the Boyle Mfg. Co., Inc., Los Angeles, manufacturer of metal containers.

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William D. Shuman, for the past seven years in charge of Pacific Coast sales of plates and shapes for the Bethlehem Steel Co., has resigned to purchase a seat on the San Francisco Stock and Bond Exchange, and has opened offices at 133 Montgomery Street, San Francisco.

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Vernon C. Ward, for the past 17 years contracting engineer American Bridge Co., in its Chicago office, has resigned that position to become manager of the newly created junior beam department Jones & Laughlin Steel Corporation, Pittsburgh.

Old Carwheel Rates from Ontario to Chicago Declared Too High

WASHINGTON, Oct. 12.—Joint class rates on scrap carwheels from Windsor, Ont., to Michigan City, Ind., and Pullman (Chicago), Ill., should not exceed $4.20 and $4.50 per gross ton respectively, according to a proposed report of Examiner Bronson Jewell to the Interstate Commerce Commission. The report was the outgrowth of a complaint filed by the Hyman-Michaels Co., Chicago, against the payment of rates of $4.92 and $5.04 for the transportation of 54 carloads of old carwheels.

OBITUARY

JOHN M. SEYFERT, president of L. F. Seyfert's Sons, Inc., Philadelphia, machinery maker, died at his home in that city, Sept. 28. He was a grandson of Simon Seyfert, one of the early ironmasters of eastern Pennsylvania and founder of the Reading Iron Works, and a son of the late William M. Seyfert, prominent forger of cannon in Civil War days. The younger Mr. Seyfert was one of the founders of the company of which he was president and had had complete charge of its affairs since the death of two brothers several years ago.

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HARRY V. DIMMICK, vice-president of the American Casting Co., Birmingham, who died recently, was, prior to the establishment, together with his brother, Daniel B. Dimmick, of the casting business in Birmingham in 1921, purchasing agent for the Grand Crossing Tack Co., Chicago, and later associated with the Keystone Steel & Wire Co., Peoria, Ill.

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GEORGE R. NORTON, for a number of years general manager Sizer Forge Co., Buffalo, and later general manager Witherow Steel Co., Pittsburgh, died recently in Buffalo. Until his health failed a few years ago, he had a high place in the development and production of electric furnace and forging steel.

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GEORGE A. RIGBY, general superintendent New Castle Works, Carnegie Steel Co., New Castle, Pa., died suddenly at his home in that city, Oct. 8. He was born in New Castle, Feb. 25, 1868, and had been active in the steel industry since his youth. He started with the Witherow Steel Co., and subsequently was employed by the Pennsylvania Engineering Co., the New Castle Wire & Nail Co. and the National Steel Co. The latter company was taken into the combination of steel companies forming the Steel Corporation and the New Castle plant became a unit of the Carnegie Steel Co. Mr. Rigby came up through the ranks to the position he held at the time of his death, his first job being as a machinist's helper.

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HARRY MACKEY, formerly general manager of the Morden Frog & Crossing Co., Chicago, died Oct. 4 at his home in Chicago Heights, Ill. He was 54 years old.

Small Increase in Steel Corporation's Unfilled Orders

Unfilled orders of the United States Steel Corporation increased moderately in September. The total unfilled business on Sept. 30 amounted to 3,593,509 tons, an increase of 51,174 tons over the 3,542,335 tons on Aug. 31. This contrasts with a decrease in August of 60,187 tons and an increase in July of 123,880 tons, the first increase since December, 1925. A year ago the unfilled business was 3,717,297 tons or 123,788 tons more than at the end of September this year. The following table gives the unfilled tonnage as reported by months beginning with January, 1924:

	1926	1925	1924
Jan. 31	4,882,739	5,037,323	4,798,429
Feb. 28	4,616,822	5,284,771	4,912,901
March 31	4,379,935	4,863,564	4,782,807
April 30	3,867,976	4,446,568	4,208,447
May 31	3,649,250	4,049,800	3,628,089
June 30	3,478,642	3,710,458	3,262,505
July 31	3,602,522	3,539,467	3,187,072
Aug. 31	3,542,335	3,512,803	3,289,577
Sept. 30	3,593,509	3,717,297	3,473,780
Oct. 31	.....	4,109,183	3,525,270
Nov. 30	.....	4,581,780	4,031,969
Dec. 31	.....	5,033,364	4,816,676

The high record in unfilled orders was 12,183,093 tons at the close of April, 1917. The lowest was 2,674,757 tons on Dec. 31, 1910.

European Price Trend Still Upward

Formation of International Cartel a Strong Stimulus—British Iron Shortage Acute —Steel Syndicate Proposed in Japan

(*By Cable*)

LONDON, ENGLAND, Oct. 11.

THE pig iron shortage is acute with no new supplies of Cleveland grades in prospect before early November and prices continually advancing. The hematite scarcity is less marked than the Cleveland and prices are steady. Foreign ore continues quiet.

Finished steel inquiry is active but makers are unable to guarantee shipment with the exception of a few works which anticipate resumption in two to three weeks' time on foreign coal, and are asking up to 30 s. increase over the current market. The Stavely Coal & Iron Co., Ltd., has secured a contract for 10,000 tons of cast iron pipe for Cairo.

Continental markets are strong as a result of inauguration of the European Steel Cartel. Works are booked rather heavily, especially with semi-finished tonnage, and available supplies are scarce. The European Rail Makers Association is meeting this week to conclude final arrangements. Central and eastern European steel works are reported contemplating joining the western European steel cartel.

Tin plate inquiry is expanding, but business is restricted because of the uncertain coal situation. There is some demand for first quarter tonnage, but makers are not keen to sell. Output is about 50 per cent of capacity, but operation is intermittent because of the difficulties encountered in using foreign coal and steel. Galvanized sheets are active, with some makers now quoting January shipment as the earliest. Black sheets are quiet.

GERMAN BOUNTIES TEMPORARY

Rebates May Cease with Establishment of International Syndicate—Payments Made on Export Rails

BERLIN, GERMANY, Sept. 24.—The report to be made public about the middle of October, of the committee which has been considering the question of German "bounties" on steel exported to the United States is apparently the result of a most painstaking study. The commission has had access to the agreement between the Ingot Steel Syndicate and the organization of consuming manufacturers. This contract merely substantiates the previous explanations of German mills and consumers that the so-called bounty system does not include pig iron, steel ingots, blooms, bars and similar products when they are exported without further manufacture. Also that the system is the direct result of the low franc exchange, which permitted France, Belgium and Luxemburg to compete on a low price basis, not possible for German manufacturers unless aid of this kind is extended to offset the present high tariff in Germany.

Under this system, representatives of the producers and consumers meet once each month and establish the "world market" prices for the ensuing month. In operation, the plan calls for full payment of the domestic price, a rebate in the form of certificates of purchase being allowed when the product is manufactured for export. Thus high domestic prices, protected by the tariff, are maintained, while export continues competitive in foreign markets.

May Export at Less Than Cost

The commission does not seem to have determined whether German mills are selling for export at a loss. In the case of expensive machinery the circumstances that the maker obtained materials at the lower "world market" price would affect the total cost only slightly. In addition, it is generally believed that the manufacturers of engineering and electrical equipment do not as a rule export at a loss, not being forced to meet the low priced competition of other countries. In semi-finished and finished steel products, however, the situation is different, for in this field there is the low priced competition of the low exchange countries. For several months the steel syndicate has complained that there is no profit even on domestic sales at present prices,

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British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.86 per £ as follows:

Durham coke, f.o.b..	£2	17½s.				$13.97		
Bilbao Rubio ore†..	0	19¾	to £1	0s.		4.80	to	$4.86
Cleveland No. 1 fdy.	5	17½				28.55		
Cleveland No. 3 fdy.	5	15				27.94		
Cleveland No. 4 fdy.	5	14				27.70		
Cleveland No. 4 forge	5	13½				27.58		
Cleveland basic (nom.)	3	15	and	3	15½	18.23	and	18.35
East Coast mixed...	4	7½				21.26		
East Coast hematite	4	8				21.38		
Rails, 60 lb. and up	7	0	to	8	0	34.02	to	38.88
Billets	6	10	to	8	0	31.59	to	38.88
Ferromanganese ...	14	0				68.04		
*Ferromanganese ..	14	0				68.04		
Sheet and tin plate bars, Welsh	6	5	to	7	10	30.38	to	36.45
Tin plates, base box	1	0½	to	1	3	4.95	to	5.59
Black sheets, Japanese specifications	15	5	to	15	15	74.12	to	76.55
						C. per Lb.		
Ship plates	7	10	to	8	0	1.62	to	1.73
Boiler plates	9	15	to	11	0	2.11	to	2.39
Tees	8	0	to	8	10	1.73	to	1.84
Channels	7	5	to	7	15	1.57	to	1.68
Beams	7	0	to	7	10	1.52	to	1.63
Round bars, ¾ to 3 in.	8	0	to	8	10	1.73	to	1.84
Steel hoops	10	10	and	11	0*	2.28	and	2.39*
Black sheets, 24 gage	11	15	to	12	0	2.54	to	2.59
Galv. sheets, 24 gage	16	15				3.63		
Cold rolled steel strip, 20 gage, nom.	18	0				3.91		

*Export price.
†Ex-ship, Tees, nominal.

Continental Prices, All F.O.B. Channel Ports

	(Per Metric Ton)							
Foundry pig iron: (a)								
Belgium	£3	16s.	to £3	17½s.		$18.47	to	$18.83
France	3	16	to	3	17½	18.47	to	18.83
Luxemburg	3	16	to	3	17½	18.47	to	18.83
Basic pig iron:								
Belgium	3	9	to	3	10	16.78	to	17.01
France	3	9	to	3	10	16.78	to	17.01
Luxemburg	3	9	to	3	10	16.78	to	17.01
Coke	0	18				4.37		
Billets:								
Belgium	5	5	to	5	7	25.52	to	26.00
France	5	5	to	5	7	25.52	to	26.00
Merchant bars:						C. per Lb.		
Belgium	5	15				1.26		
Luxemburg	5	15				1.26		
France	5	15				1.26		
Joists (beams):								
Belgium	5	12½				1.24		
Luxemburg	5	12½				1.24		
France	5	12½				1.24		
Angles:								
Belgium	5	15				1.26		
⅛-in. plates:								
Belgium (nominal)	6	15				1.49		
Germany (nominal)	6	15				1.49		
⅛-in. ship plates:								
Belgium	6	7½				1.40		
Luxemburg	6	7½				1.40		
Sheets, heavy:								
Belgium	6	3	to	6	4	1.33	to	1.34
Germany	6	3	to	6	4	1.33	to	1.34

(a) Nominal.

so it seems possible that export is at a loss. It is almost impossible to determine the exact costs of production for the various syndicate members, as many have their own coal and ore interests and the finances of the various companies are complicated.

Prior to the war a similar situation prevailed in the German steel industry. No rebates for export were allowed to the manufacturers for export, but semi-finished and finished products were exported at prices considerably below the domestic level, the aim being to maintain full operation. On such sales, the mills are understood to have lost money, but the method, as a whole, made for economical production. At this time the British steel industry complained of German "dumping" of iron and steel but the British shipbuilders and other manufacturers retorted that their export business was increasing principally as a result of their ability to purchase German materials cheaper than their German competitors could buy.

Bounty Paid on Rail Exports

Steel rails are evidently in a separate class in receiving a bounty for export. Although the recent sale of German rails to the Boston & Maine Railroad first brought this situation to the attention of American mills, German rail exports have long been expanding, it is claimed, as a result of the payment of a bounty. From 88,134 tons in 1924 shipments abroad advanced to 404,401 tons in 1925 and in the first half of 1926 totaled 246,787 tons. It seems certain that the German bounty system has diverted many orders from American mills.

The present "bounty" is only temporary, according to the statements of the steel syndicate. Its principal reason for existence is claimed to be the necessity of meeting the competition in world markets of the low exchange countries. It is further claimed in some quarters that the bounty system will be abandoned as soon as the International Steel Syndicate begins to operate. Under the Paris agreement, the international syndicate will not establish prices or measure its production is expected to maintain a level of output that for over production and paying bounties for under production for export, but the plan of exacting penalties will automatically regulate prices and keep them at a profitable level. In addition French and Belgian gold franc prices for steel are rising rapidly, partly because of increased demand and partly as a result of the recovery of the franc in international exchange.

JAPANESE SYNDICATE PROPOSED

Government Controlled Sales Unit Planned—Tariff Committee Goes to Europe—Pig Iron Imports Heavy

TOKIO, JAPAN, Sept. 21.—Once again a plan for the nationalization of the Japanese steel industry has been presented to the public, this time by a most influential group of business men and legislators, including representatives from all the leading parties of the Imperial Diet. While nationalization has been a favorite topic for many years, and especially the unprofitable years since the panic of 1920, its present sponsors should be able to secure for it, if not actual adoption, at least a more careful hearing than it has had heretofore.

This group, which has called itself the Nanokakai, includes members of the Kenseikai, Seiyuhonto and Seiyukai, the three leading parties in the Diet; the Government Ministries most intimately concerned, the House of Peers, the Toyo Iron Mfg. Co., the Mitsubishi Iron Mfg. Co., the Japan Steel Works, the Japan Steel Tubing Co., the Kobe Steel Works, the Fuji Steel Mfg. Co. and the Kamaishi Iron Mining Co., a Mitsui subsidiary.

The Nanokakai wishes to form the basis for eventual Government ownership, in whole or in part, of all the steel producers in the country. To do this, it plans to establish a commercial entente for joint sales among the Japan Steel Tubing, the Fuji Steel and the Kamaishi Iron Mining companies. Efforts would be made to induce other concerns to join this combination and the Government might in time either buy out the private holdings or by other means obtain a controlling interest in the operation of the syndicate.

Simultaneous with this announcement comes the report from the Kwansai district that the Kobe Steel Works, the Osaka Iron Mfg. Co., the Kawasaki Dockyard Co. and the Sumitomo Steel Works have agreed to an independent joint sales plan.

An announcement from the Imperial Government Railways states that it intends to replace the 60-lb. rails now in general use throughout the country with 75-lb. rails. An attempt will be made to accomplish this change in five years at an expenditure of 35,000,000 yen. Last year the Government railroads purchased 80,000 tons of 75-lb. rails from the Imperial Government Steel Works at Edamitsu for approximately 8,000,000 yen. Investigations have shown that from 1919 to 1925 the accidents due to rail failure occurring on the 1,500-mile stretch laid with 75-lb. sections have been much lower than on the 60-lb. parts of the system.

Elimination of Great Britain from the market here is still strengthening prices. The Government Steel Works has just announced a new range of prices, in yen, as follows:

	December Per Ton		Spot Per Ton	
Round bars	87	$42.10	93	$45.00
Square bars and flat	87	42.10	93	45.00
Angles (medium)	88	42.60	94	45.50
Angles (large)			101	48.88
Joists	95	45.98	101	48.88
Sheets (light)	94	45.50	99	47.92

Steel demand has been increasing as the construction of permanent buildings in Tokio and Yokohama has gained momentum. Large buildings, practically all of structural steel and reinformed concrete, are going up everywhere in the capital and the market is reflecting the new demand.

Plans to increase Japan's tariff on steel once more are being considered and a commission is to leave shortly for Europe to study conditions. It is to be composed of Kaichiro Imaizumi, managing director of the Japan Steel Tubing Co., and Dr. Viscount Masatoshi Okochi, a metallurgist and member of the House of Peers.

JAPAN IMPORTS MORE COPPER

Estimate of 10,000 Tons for This Year—Domestic Producers Reduce Price

TOKIO, JAPAN, Sept. 21.—Japanese copper interests are complaining that the high exchange rates are hurting their business. Despite the tariff of 7 yen per 132 lb. on ingots and slabs, August imports of American copper totaled about 1000 tons. It is estimated that 10,000 tons of copper from the United States will have entered the Empire before the end of 1926. Such a figure would set a record. In 1923, Japan imported 6446 tons of foreign copper. The total was 7028 tons in 1924 and only 645 tons in 1925.

The Suiyokai, an organization of copper producers, has decided to lower its price to 48 yen per 132 lb. (17 3/5c. per lb.).

Monthly production of copper in Japan ranges from 5800 and 6000 metric tons. The leading producers are Furukawa, 1500; Kubara, 1300; Sumitomo, 1100; Mitsubishi, 1000, and Fujita, 700. As consumption is between 600 and 800 tons more a month, American copper normally fills the shortage. The leading consumers are: Furukawa, 2500; Sumitomo, 1500; Fujikara, 700; Kubara, 500; Osaka Denki Bundo, 300; all others about 1100 tons.

About 70 per cent of Japan's consumption of copper goes into electric wire, although producers have met with fair success in their efforts to gain a market for copper utensils and specialties.

Costs of Making Billets Analyzed

Committee of Manufacturers Prepares Report Which May Be Basis for New List of Extras—Data Presented to American Iron and Steel Institute

A COMMITTEE of semi-finished steel manufacturers headed by Charles O. Hadly, vice-president Alan Wood Iron & Steel Co., Philadelphia, has prepared a report on costs of manufacturing carbon steel billets which will be presented to the American Iron and Steel Institute at its fall meeting, and which may be the basis for a new classification of extras for billets. The report of the committee in detail follows:

"At the May, 1925, meeting of the American Iron and Steel Institute, a paper was presented and read by

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Estimated Average Extra Costs for Blooms, Billets and Slabs—Basic Open Hearth Steel

FOR CARBON CONTENT

When maximum of range specified is	0.09 or less	Extra A	$2
When minimum of range specified does not exceed	0.20	Base	
When minimum of range specified is between	0.21 and 0.50 incl.	Extra B	1
When minimum of range specified is between	0.51 and 0.75 incl.	Extra C	2
When minimum of range specified is between	0.76 and 0.95 incl.	Extra D	3
When minimum of range specified is between	0.96 and 1.40 incl.	Extra E	5

FOR CARBON RANGES

When minimum specified is	Standard Ranges Ladle Analysis	Special Ranges Closer Than Standard		
Up to 0.20 inclusive	5 points base	For each 0.01	Extra F	$1
Between 0.21 and 0.50 inclusive	10 points base			
Between 0.51 and 0.95 inclusive	15 points base			
Between 0.26 and 0.40 inclusive	20 points base			

FOR MANGANESE CONTENT

When maximum of range specified is	0.35 or less	Extra G	$3
When minimum of range specified is between	0.30 and 0.60 incl.	Base	
When minimum of range specified is between	0.61 and 0.80 incl.	Extra H	2
When minimum of range specified is between	0.81 and 1.20 incl.	Extra I	4

FOR MANGANESE RANGES

When minimum specified is	Standard Ranges Ladle Analysis	Special Ranges Closer Than Standard		
Up to 0.35 inclusive	15 points base	For each 0.05	Extra J	$1
Up to 0.60 inclusive	20 points base			
Between 0.61 and 1.20 inclusive	30 points base			

FOR SILICON CONTENT

When minimum of range is not specified		Base	
When minimum of range does not exceed	0.15	Extra K	$1
When minimum of range is between	0.16 and 0.25 incl.	Extra L	3
When minimum of range is between	0.26 and 0.40 incl.	Extra M	10

FOR SILICON RANGES

When minimum specified is	Standard Ranges Ladle Analysis	Special Ranges Closer Than Standard		
Up to 0.15 inclusive	10 points base	For each 0.01	Extra N	$1
Between 0.16 and 0.25 inclusive	15 points base			
Between 0.26 and 0.40 inclusive	20 points base			

FOR PHOSPHORUS LIMITS

When maximum limit specified is 0.040 or over with no minimum		Base	
When maximum limit specified is less than 0.04. For each 0.005		Extra O	$1
When minimum limit specified is 0.04 and over		Extra P	1

FOR SULPHUR LIMITS

When maximum limit specified is 0.050 or over with no minimum		Base	
When maximum limit specified is 0.045		Extra Q	$1
When maximum limit specified is 0.040		Extra R	2
When maximum limit specified is 0.035		Extra S	3
When maximum limit specified is 0.030		Extra T	5
When minimum limit specified is between 0.050 and 0.070		Extra U	3
When minimum limit specified is 0.071 and over		Extra V	5

FOR COPPER CONTENT

When maximum of range specified is	0.10 or over with no minimum	Base	
When minimum of range specified does not exceed	0.20	Extra W	$3
When minimum of range specified is between	0.21 and 0.40	Extra X	5

FOR COPPER RANGES

When minimum specified is	Standard Ranges Ladle Analysis	Special Ranges Closer Than Standard		
Up to 0.20 inclusive	25 points base	For each 0.05	Extra Y	$1
Between 0.21 and 0.40 inclusive	40 points base			

Check Analysis in Accordance with Manufacturers' "Standard Methods of Sampling and Permissible Variations for Check Analysis," revised 1926.

(a) In accordance with Section 13 or 14, respectively		Base	
(b) In accordance with Section 15		Extra Z	$3

Charles O. Hadly, on "Classification of Carbon Steel Billets," following which there has been considerable discussion, which led to careful checking of various phases of the subject by a number of manufacturers of semi-finished steel, who subsequently invited all manufacturers to submit cost of production data which might be used as a guide in further consideration of the subject.

"Investigation followed, covering almost a year, in an effort to ascertain the average production costs of meeting various specifications, and this report is the result based on exhaustive and voluminous data submitted by practically all manufacturers.

"It will be observed that these are submitted as average costs from which in individual cases, there may be slight variations either way and taking into account difference in location, equipment, fuels, and local conditions. A copy of these findings has been sent to the American Iron and Steel Institute and also to each of the companies contributing information or cost data and assisting in its compilation, as per list appended. CHARLES O. HADLY, *Chairman.*"

Estimated Average Extra Costs for Blooms, Billets and Slabs—Acid Open Hearth Steel

Acid Open Hearth Quality		Extra AOH	$7.50

FOR CARBON CONTENT

When maximum of range specified is	0.09 or less	Extra AA	$2
When minimum of range specified does not exceed	0.20	Base	
When minimum of range specified is between	0.21 and 0.50 incl.	Extra AB	1
When minimum of range specified is between	0.51 and 0.75 incl.	Extra AC	2
When minimum of range specified is between	0.76 and 0.95 incl.	Extra AD	3
When minimum of range specified is between	0.96 and 1.40 incl.	Extra AE	5

FOR CARBON RANGES

When minimum specified is	Standard Ranges Ladle Analysis	Special Ranges Closer Than Standard		
Up to 0.20 inclusive	5 points base			
Between 0.21 and 0.50 inclusive	10 points base			
Between 0.51 and 0.95 inclusive	15 points base	For each 0.01	Extra AF	$1
Between 0.96 and 1.40 inclusive	20 points base			

FOR MANGANESE CONTENT

When maximum of range specified is	0.35 or less	Extra AG	$1
When minimum of range specified is between	0.30 and 0.60 incl.	Base	
When minimum of range specified is between	0.61 and 0.80 incl.	Extra AH	2
When minimum of range specified is between	0.81 and 1.20 incl.	Extra AI	4

FOR MANGANESE RANGES

When minimum specified is	Standard Ranges Ladle Analysis	Special Ranges Closer Than Standard		
Up to 0.35 inclusive	15 points base			
Up to 0.60 inclusive	20 points base	For each 0.05	Extra AJ	$1
Between 0.61 and 1.20 inclusive	30 points base			

FOR SILICON CONTENT

When minimum of range is not specified		Base	
When minimum of range does not exceed	0.15	Extra AK	$1
When minimum of range is between	0.16 and 0.25 incl.	Extra AL	3
When minimum of range is between	0.26 and 0.40 incl.	Extra AM	10

FOR SILICON RANGES

When minimum specified is	Standard Ranges Ladle Analysis	Special Ranges Closer Than Standard		
Up to 0.15 inclusive	10 points base			
Between 0.16 and 0.25 inclusive	15 points base	For each 0.01	Extra AN	$1
Between 0.26 and 0.40 inclusive	20 points base			

FOR PHOSPHORUS LIMITS

When maximum limit specified is 0.050 or over with no minimum		Base	
When maximum limit specified is 0.045		Extra AO	$2
When maximum limit specified is 0.040		Extra AAO	5
When minimum limit specified is 0.04 and over		Extra AP	1

FOR SULPHUR LIMITS

When maximum limit specified is 0.050 or over with no minimum		Base	
When maximum limit specified is 0.045		Extra AQ	$2
When maximum limit specified is 0.040		Extra AR	5
When minimum limit specified is between 0.050 and 0.070		Extra AU	3
When minimum limit specified is 0.071 and over		Extra AV	5

FOR COPPER CONTENT

When maximum of range specified is	0.10 or over with no minimum	Base	
When minimum of range specified does not exceed	0.20	Extra AW	$3
When minimum of range specified is between	0.21 and 0.40	Extra AX	5

FOR COPPER RANGES

When minimum specified is	Standard Ranges Ladle Analysis	Special Ranges Closer Than Standard		
Up to 0.20 inclusive	25 points base			
Between 0.21 and 0.40 inclusive	40 points base	For each 0.05	Extra AY	$1

Check Analysis in Accordance with Manufacturers' "Standard Methods of Sampling and Permissible Variations for Check Analysis," revised 1926.

(a) In accordance with Section 13 or 14 respectively	Base	
(b) In accordance with Section 15	Extra Z	$3

Estimated Average Extra Costs for Blooms, Billets and Slabs—Bessemer Steel

For Carbon Content

When minimum of range specified is	0.07 or less	Extra BA	$2
When minimum of range specified does not exceed	0.10	Base	
When minimum of range specified is between	0.11 and 0.35 incl.	Extra BB	1
When minimum of range specified is between	0.36 and 0.60 incl.	Extra BC	2
When minimum of range specified is between	0.61 and 0.75 incl.	Extra BD	3

For Carbon Ranges

When minimum specified is	Standard Ranges Ladle Analysis	Special Ranges Closer Than Standard		
Up to 0.10 inclusive	5 points base	For each 0.01	Extra BF	$1
Between 0.11 and 0.40 inclusive	10 points base			
Between 0.41 and 0.60 inclusive	15 points base			
Between 0.61 and 0.75 inclusive	20 points base			

For Manganese Content

When maximum of range specified is	0.35 or less	Extra BG	$1
When minimum of range specified is between	0.30 and 0.60 incl.	Base	
When minimum of range specified is between	0.61 and 0.80 incl.	Extra BH	2
When minimum of range specified is between	0.81 and 1.20 incl.	Extra BI	4

For Manganese Ranges

When minimum specified is	Standard Ranges Ladle Analysis	Special Ranges Closer Than Standard		
Up to 0.35 inclusive	15 points base	For each 0.05	Extra BJ	$1
Up to 0.60 inclusive	20 points base			
Between 0.61 and 1.20 inclusive	30 points base			

For Silicon Content

When minimum of range is not specified		Base	
When minimum of range does not exceed	0.15	Extra BK	$1
When minimum of range is between	0.16 and 0.25 incl.	Extra BL	3

For Silicon Ranges

When minimum specified is	Standard Ranges Ladle Analysis	Special Ranges Closer Than Standard		
Up to 0.15 inclusive	10 points base	For each 0.01	Extra BN	$1
Between 0.16 and 0.25 inclusive	15 points base			

For Phosphorus Limits

When maximum limit specified is 0.11 or over		Base	
When maximum limit specified is less than 0.11.	For each 0.005	Extra BO	$1

For Sulphur Limits

When maximum limit specified is 0.070		Base	
When maximum limit specified is 0.060		Extra BQ	$1
When maximum limit specified is 0.050		Extra BR	2
When maximum limit specified is 0.040		Extra BS	3
When minimum limit specified is between 0.060 and 0.070 incl.		Extra BT	1
When minimum limit specified is 0.071 and over		Extra BU	3

For Copper Content

When maximum of range specified is	0.10 or over with no minimum	Base	
When minimum of range specified does not exceed	0.20	Extra BW	$2
When minimum of range specified is between	0.21 and 0.40	Extra BX	5

For Copper Ranges

When minimum specified is	Standard Ranges Ladle Analysis	Special Ranges Closer Than Standard		
Up to 0.20 inclusive	25 points base	For each 0.05	Extra BY	$1
Between 0.21 and 0.40 inclusive	40 points base			

Check Analysis in Accordance with Manufacturers' "Standard Methods of Sampling and Permissible Variations for Check Analysis," revised 1926.

(a) In accordance with Section 13 or 14, respectively	Base	
(b) In accordance with Section 15	Extra Z	$3

Estimated Average Extra Costs on Account of Size, for Blooms, Billets and Slabs

Size, Inches	*Average Extra Cost Above Base Dollars per Gross Ton*
Squares, under 1¾ × 1¾ to 1½ × ½ inclusive.	$3
Squares, under 4 × 4 to 1¾ × 1¾ inclusive, or rectangular sections of equivalent areas not less than 3 in. thick	1
4 × 4 to under 10 × 10 or equivalent area	Base
10 × 10 to under 14 × 14	Do 2
14 × 14 to under 16 × 16	Do 4
16 × 16 to under 20 × 20	Do 6
20 × 20 and over	Do 8
Weight per piece when ordered 12,000 lb. and over (This shall not apply when product of ingot is accepted)	10
Slabs or rectangular sections having unequal sides under 3 in. thick	2

Billets under 4 × 4 shall not be furnished in forging quality.

Any sizes smaller than 1½ × 1½ shall not be considered as billets.

Proposed Quality Classification and Estimated Average Extra Costs Above Base of Steel Blooms, Billets and Slabs

CLASS OR—Ordinary Rerolling Quality

Normal top discard.

The ends may be hot sawed or sheared and shall be free from open piping.

The surfaces shall be free from open cracks and large slivers, but are not required to be chipped.

The chemical composition to be determined by ladle analyses.

This quality is intended to be used for rerolling into general commercial grades of bars, structural plates and shapes, etc.

Estimated average cost per gross ton..... Base

CLASS SR—Special Surface Rerolling Quality

Normal top discard.

The ends may be hot sawed or sheared and shall be free from open piping.

The surfaces shall be prepared by chipping or other methods to eliminate visible surface imperfections.

The chemical composition to be determined by ladle analyses.

This quality is intended to be used for rerolling into products such as cold finished bars, hot rolled strips, etc., which are required to have smooth and clean surfaces.

Estimated average cost above base per gross ton. $1.54

CLASS DR—SPECIAL TOP DISCARD REROLLING QUALITY

Special top discard.
The ends may be hot sawed or sheared.
The steel shall be free from piping.
The surfaces shall be free from open cracks and large slivers, but are not required to be chipped.
The chemical composition to be determined by ladle and standard check analyses.
This quality is intended to be used for rerolling into bars and other sections which are required to be free from piping.
Estimated average cost above base per gross ton. $2.50

CLASS SDR—SPECIAL SURFACE AND TOP DISCARD REROLLING QUALITY

This quality is a combination of Classifications SR and DR, given above, and is intended to be used for rerolling into special forging quality bars, strips intended for cold rolling and similar purposes, which are required to have smooth and clean surfaces and to be free from piping.
Estimated average cost above base per gross ton. $5

CLASS F—FORGING QUALITY

Special top discard.
The ends may be hot sawed or sheared.
The steel shall be free from piping.
The surfaces shall be prepared by chipping or other methods to eliminate visible surface imperfections.
The chemical composition to be determined by ladle and standard check analyses.
This quality is intended to be used for forgings such as car axles, automobile and general forgings, etc., which are required to have clean surfaces and to be free from piping.
Estimated average cost above base per gross ton. $5

CLASS Fa—

When forging quality is subject to segregation restriction in chemical composition determined by analysis from drillings taken at two points in the same section:
Estimated average additional cost for this requirement per gross ton $5

CLASS Fb—

When forging quality is subject to examination of the interior by fracture tests only:
Estimated average additional cost for this requirement per gross ton $5

CLASS Fc—

When forging quality is subject to deep etching, macroscopic or microscopic tests:
Estimated average additional cost for this requirement per gross ton $10

CLASS LF—FORGING QUALITY FOR LOCOMOTIVE DRIVING AXLES AND OTHER LARGE FORGINGS

Special top discard.
The ends may be hot sawed or sheared.
The steel shall be free from piping and subject to segregation restrictions in chemical composition determined by check analysis from drillings taken at two points in the same section.
The surfaces shall be prepared by chipping or other methods to eliminate visible surface imperfections.
This quality is intended to be used for locomotive driving axles and other large forgings, which are required to be within specified limits of variation in chemical composition in cross sections.
Estimated average cost above base per gross ton. $10

CLASS LFa—

When locomotive forging quality is subject to examination of the interior by fracture tests only:
Estimated average additional cost for this requirement per gross ton $5

CLASS LFb—

When locomotive forging quality is subject to deep etching macroscopic or microscopic requirements:
Estimated average additional cost for this requirement per gross ton $10

The personnel of the committee having this matter in charge is as follows:

Andrews Steel Co.: J. B. Andrews, president.

Bethlehem Steel Co.: E. F. Kenney, metallurgical engineer; L. R. Steuer, sales agent.

Carnegie Steel Co.: J. O. Leech, manager, bureau of inspection and tests; L. C. Lustenberger, sales agent; J. R. Mills, manager sales, Cleveland; C. F. W. Rys, metallurgical engineer; W. P. Siebert, assistant general sales agent rail and billet; Hugh P. Tiemann, assistant metallurgical engineer.

Donner Steel Co.: F. R. Huston, formerly vice-president in charge operating; W. F. Vosmer, vice-president in charge of sales; A. G. Greenameyer, assistant superintendent.

Harrisburg Pipe & Pipe Bending Co.: F. D. Andrews, general superintendent; H. W. Bishop, Jr., general sales manager.

Illinois Steel Co.: J. Brunner, manager department of metallurgy and inspection; R. G. Glass, assistant manager department of metallurgy and inspection; William I. Howland, Jr., general sales department; P. W. O'Brien, assistant general manager sales.

Inland Steel Co.: L. S. Marsh, manager department inspection and metallurgy; Powell Pardee, manager, order department.

Jones & Laughlin Steel Corporation: C. S. Bradley, general manager of sales; J. J. Shuman, inspection engineer; R. J. Wysor, assistant general manager.

McKinney Steel Co.: H. W. Haggerty, vice-president in charge of sales; H. T. Harrison, vice-president in charge of operating.

Penn Seaboard Steel Co.: J. B. Warren, president; Paul J. Driscoll, sales department.; James S. Kirwin, vice-president in charge operating.

Pittsburgh Crucible Steel Co.: R. M. Keeney, general superintendent; W. W. Williams, general sales manager.

Pittsburgh Steel Co.: J. F. Hazen, general manager of sales; G. W. Jones, assistant general manager of sales; R. S. Simmons, manager research.

Republic Iron & Steel Co.: L. B. Grindlay, inspection engineer; W. H. Oliver, manager of sales; W. B. Topping, general manager of sales.

Tenessee Coal, Iron & Railroad Co.; O. U. Cook, inspecting engineer.

United Alloy Steel Corporation; F. W. Krebs, sales department.

Wheeling Steel Corporation: R. M. Clemens, sales semi-finished department; C. E. Korns, general superintendent, Portsmouth Works; B. P. Hazeltine, metallurgist; W. M. MacCleary, semi-finished raw material; J. C. Tucker, general sales manager; F. W. Knowles, special agent.

Alan Wood Iron & Steel Co.: C. O. Hadly (chairman of meeting) vice-president in charge of sales; W. S. Haring, general manager sales; A. L. Meyer, metallurgical engineer; F. C. Milliken, manager billet sales; H. C. Thomas, vice-president in charge of operations.

Youngstown Sheet & Tube Co.: G. A. Reinhardt, metallurgical engineer; J. B. Roberts, assistant manager sales.

NEW TRADE PUBLICATIONS

Optical Pyrometer.—Bacharach Industrial Instrument Co., Pittsburgh, Bulletin 293, describes in full the H-K Optical Pyrometer and gives a chart showing methods of making determinations and corrections.

Automobile Steels.—International Nickel Co., New York. Bulletin No. 7, "Automobile Design & Automotive Steels," is a bulletin perforated for binding, in which the factors influencing the design of the modern motor car and the selection of suitable steels to be used in its construction are outlined, with typical calculations illustrating the methods used to determine the stresses and factors of safety in various automotive parts.

Oil Circuit Breakers.—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Leaflet 20292 describing the type MF motor starting oil circuit breaker. Manual operation, indoor service, non-automatic starting position and the automatic running position are pointed out and full information is given on its application, operation, construction and specifications.

Insulating Brick.—Celite Products Co., 1320 South Hope Street, Los Angeles. Bulletin 103 dealing with four kinds of insulating brick manufactured by the company. Included are Sil-O-Cel standard brick for service where insulation will be subjected to temperatures no higher than 1600 deg. Fahr., Sil-O-Cel C-22 brick for temperatures from 1600 to 2000 deg. Fahr., Sil-O-Cel Super brick for temperature from 2000 to 2500 deg. Fahr. and Sil-O-Cel rotary kiln brick, especially designed for insulating rotary cement and lime kilns.

The new blast furnace of the Central Alloy Steel Corporation, Massillon, Ohio, has been scheduled to be placed in operation Oct. 28. Several weeks ago Sept. 23 was set as the date for starting this furnace, but lighting of the stack was delayed.

Machinery Markets and News of the Works

DEMAND TAPERS

Machine Tool Buying Is Lighter in Most Market Centers

Purchases by Nash Motors Co. for Its Racine Plant Are Conspicuous in a Quiet Week—Two School Lists Issued at Pittsburgh

AN increase in machine tool business is reported from Chicago, but most of the gain was accounted for by orders from the Nash Motors Co. for its Racine, Wis., plant, where a large expansion program is under way. The bookings of dealers in all other selling centers have shown a decline. In New England many prospective buyers are postponing purchases pending an improvement in business conditions. In New York many quotations are outstanding, but there appears to be more hesitancy on the part of users in placing orders than has existed for some time. Less pessimistic reports come from Western market centers. Although bookings for the week showed a decline at Cincinnati, orders and inquiries from the automotive industry are still in encouraging volume. At Cleveland the present lull in buying is regarded as temporary, and a turret lathe manufacturer, contrary to the experience of most machine tool builders, reports business holding up to the September volume, which was very good. At Pittsburgh, sales are fairly numerous, although confined, as a rule, to single machines.

The International Harvester Co., Chicago, has issued a sizable list for its motor truck plant at Fort Wayne, Ind. The Pittsburgh Board of Education has issued lists for two schools, totaling 51 items.

Neither the railroads nor the railroad car builders are taking an active interest in the market, although they are placing occasional orders for one or two machines, some of them large tools. The Pullman Car & Mfg. Corporation has purchased two carwheel lathes, and the Chicago, Rock Island & Pacific has closed for a carwheel borer.

New York

NEW YORK, Oct. 11.

THERE is no material change in the local machine tool situation. Many quotations have been made by New York selling offices within the past month or so, but a majority of these are still outstanding, and frequent comment is heard that more hesitation on the part of manufacturers in placing orders exists now than in some time. Orders have been in fair volume, but trade as a whole lacks the "snap" which characterized it even in the midsummer months.

Among the week's purchases are the following: Two carwheel lathes by the Pullman Car & Mfg. Corporation, Chicago; a carwheel borer by the Chicago, Rock Island & Pacific Railroad; a 10-ft. plate flanging clamp by the Illinois Central Railroad; a 4-ft. radial drill by the New York Central; a 7-ft. vertical boring mill by a Pennsylvania engine manufacturer; a 48-in. x 10-ft. planer by the Delco Light Co., Dayton, Ohio; a 3-ft. radial drill by the Illinois Steel Co., Gary, Ind.; a 5-ft. radial drill by a Detroit manufacturer; a 16-in. geared-head lathe by a Decatur, Ill., company; a 16-in. geared-head lathe by a San Francisco public utilities company; a jig borer and a 16-in. geared-head lathe by an electrical plant at Fort Wayne, Ind.; a 30-in. profiling machine by a Detroit motor car company; four bench milling machines by three companies in California, two 8-in. automatic milling machines by a Chicago manufacturer; a 4½-in. x 12-in. thread milling machine by a Buffalo company.

In connection with its proposed new oil storage and distributing plant at 1117-63 Grand Avenue, Brooklyn, the Sinclair Refining Co., 45 Nassau Street, New York, will build a large repair shop, and automobile service, repair and garage building for company motor trucks. The entire project will cost $475,000.

W. Peat, care of Kerrigan & Ward, 489 Lexington Avenue, New York, architects, has plans nearing completion for a new two-story ice-manufacturing plant to cost in excess of $65,000 with equipment.

E. A. Wildermuth, 1061 Atlantic Avenue, Brooklyn, manufacturer of automotive electrical products, has asked bids on general contract for a new one-story plant, 52 x 70 ft., to cost $30,000 with equipment. Adolph Goldberg, 164-6 Montague Street, is architect.

The Associated Gas & Electric Co., 61 Broadway, New York, has acquired an extensive interest in the Staten Island Edison Co., St. George, and will carry out an expansion program in conjunction with other controlling concerns. Work will proceed on an extension in the power plant, including the installation of a 15,000 kw. turbo-generator and accessory equipment.

The Consolidated Gas Co., 130 East Fifteenth Street, New York, has filed plans for a six-story equipment storage and mechanical shop building, 90 x 200 ft., at 120-34 Amsterdam Avenue, to cost $200,000.

The G. D. Tile Co., Inc., 958 Grand Avenue, Brooklyn, has acquired property at Market and Read Streets, Newark, N. J., and will soon begin the construction of a new branch, 40 x 100 ft.

The Bayonne Steel Ceiling Co. of New York, Inc., 223 West Nineteenth Street, New York, has acquired property in the Degnon terminal district, Long Island City, and is reported planning a new factory at this location.

The Direct Control Light Corporation, 405 Broome Street, New York, has been organized to take over and expand the local company of the same name and the Lazar Holding Corporation, with capital of 100,000 shares of stock, no par value. W. C. Davidson is one of the heads of the company.

W. G. Goodnough, 221 West Fifty-seventh Street, New York, is having plans completed for a new one-story plant, 60 x 200 ft., at North Bergen, N. J., for the manufacture of wire fencing. It is estimated to cost approximately $40,000 with equipment. Robert Bolton, 31 Clinton Street, Newark, N. J., is architect and engineer.

Fire, Oct. 1, destroyed the plant of the Jamesburg Ice Co., South Main Street, Asbury Park, N. J., with loss reported at $100,000 including equipment. It is planned to rebuild.

The Great Northern Tinning Co., 207 Murray Street, Newark, N. J., has leased a floor in the building at 80 Ferguson Street for extensions.

Henry Pollock, 479 Hawthorne Avenue, Newark, is said to be head of a project to construct and operate a new plant at Anderson, N. J., for the manufacture of aeroplanes and parts.

The Jersey Central Power & Light Co., Morristown, N. J., has concluded negotiations for the purchase of the municipal hydroelectric power plant at Pompton Lakes, N. J., and will take over the property at an early date. Extensions and improvements are planned.

The Cooper-Hewitt Electric Co., 95 River Street, Hoboken, N. J., manufacturer of electric lamps, has taken bids on general contract for a proposed four-story addition, 80 x 200 ft., to cost in excess of $100,000 with equipment. Lockwood, Greene & Co., 1 Pershing Square, New York, are architects and engineers.

The Hudson County Buick Co., 870 Bergen Avenue, Jersey City, N. J., local representative for the Buick automobile, has plans for a two-story addition, to cost about $100,000 including improvements in present structure. J. T. Rowland, Jr., 101 Sip Avenue, is architect.

H. R. Goeller, Inc., Hillside Avenue and Lehigh Valley railroad tracks, Hillside, N. J. (mail address, Box 21, Elizabeth, N. J.), was recently incorporated and a number of old employees became stockholders. The business, which is the fabrication of structural steel and ornamental iron work, has been conducted by Mr. Goeller under individual ownership for 13 years. Officers of the company are: John Goeller, president; George Kollmar, vice-president; William Buie, secretary. Mrs. Harriet R. Goeller and Edward Knorr are directors in addition to the officers.

Frozen Flame, Inc., 165 Broadway, New York, a new corporation, has plans under way for the manufacture of a patented device which will supply refrigeration to iceboxes and gas to gas stoves in one operation.

The Standard Electric Fixture Co., Garwood, N. J., has recently been organized to manufacture electric lighting fixtures. It has taken a five-year lease on a plant and will soon be in the market for raw materials and machinery.

New England

BOSTON, Oct. 11.

DULLNESS is reported by New England machine tool dealers, a small amount of press equipment for Ohio delivery and some gear cutting equipment for Southern delivery, being the only sales of note. Increase in new inquiries has fallen off again and those outstanding apparently are no nearer closing than they were Oct. 1. Most of the New England metal-working shops are busy. Demand for small tools and machine parts holds up well.

Plans are near completion for a two-story, 56 x 93 ft. elementary school at Taunton, Mass., to contain manual training departments. McLaughlin & Burr, 88 Tremont Street, Boston, are the architects.

Plans are in progress for a three-story, 42 x 111 ft., plant at Gardner, Mass., for E. W. Pierce & Chesworth, Inc., machinery. E. W. Gardner is president.

Work has started on a two-story, 50 x 100 ft. assembling plant on Mt. Vernon Street, South Boston, by the Underwood Machinery Co. William K. Underwood is purchasing agent. R. J. McCarthy, company engineer, is in charge of plans.

The Eagle Lock Co., Teryville, Conn., has added stove bolts and wood screws to its products which are being manufactured at the rate of 4,400,000 pieces weekly.

The Athol Pump Co., Athol, Mass., has been purchased by the Leavitt Machine Co., Orange, Mass. The business has been in one family since 1863. A. F. Fletcher was the founder and since his death the company has been under the management of his son, Edgar A. Fletcher. In addition to pumps, the company's products include plumbers' fittings.

The Maxim Silencer Co., Hartford, Conn., is occupying new offices in the Capitol Building, 422 Asylum Street, Hartford.

The Gulf Refining Co., 3607 Washington Street, Boston, has taken out a permit for a one-story mechanical shop to cost $55,000.

The Hood Rubber Co., East Watertown, Mass., manufacturer of automobile tires, etc., is disposing of a portion of an issue of $5,000,000, a portion of the proceeds to be used for extensions and improvements. Frederic C. Hood is president.

Officials of the Gray Telephone Pay Station Co., Hartford, Conn., headed by George A. Long, president and general manager, are organizing the Long Security Lock Co., to manufacture special locks and locking devices, particularly for use in connection with prepayment telephone stations. The parent organization has been devoting a portion of its plant to the new lock production, averaging about 5000 per week. Mr. Long will be president of the new company; other officials will include Ferdinand Richter, Ralph H. Soby, Frederick S. Bliss and Fred L. Bishop.

The City Council, Newton, Mass, has approved plans for the immediate erection of a two-story municipal service, repair and garage building, estimated to cost $100,000 with equipment.

The Pierce-Arrow Motor Car Co., 696 Commonwealth Avenue, Boston, is having plans completed for a three-story factory branch, service and repair building, 100 x 300 ft., to cost close to $350,000 with equipment. Harold J. Cook, 408 Pearl Street, Buffalo, is architect.

The Roto Co., Hartford, Conn., manufacturer of boiler tube cleaners, etc., has leased property at Sussex Avenue and Newark Street, Newark, N. J., for a new branch plant. Operations will begin in November.

The St. Paul's School, Concord, N. H., has plans for a new one-story and basement power plant, 80 x 120 ft., to cost about $45,000. Day & Klauder, 1416 Chestnut Street, Philadelphia, are architects; French & Hubbard, 210 South Street, Boston, are engineers.

The Builders Iron Co., 1 Button Street, New Haven, Conn., has recently been incorporated to manufacture building products. The first articles to be put on the market will be sidewalk doors and hatchways.

The Chapman Valve Mfg. Co., Indian Orchard, Springfield, Mass., will shortly start work on a one-story, 100 x 450 ft. machine shop. Dwight P. Robinson, New York, is the architect.

Buffalo

BUFFALO, Oct. 11.

CONTRACT has been awarded by the Jamestown Metal Desk Co., 104 Blackstone Street, Jamestown, N. Y., to the Warren Construction Co., Gokey Building, for a one-story plant to cost $100,000 with equipment. Emil Jones is general manager.

Kuskin & Konikoff, 45-55 Allen Street, Buffalo, are said to be planning the purchase of several machine tools and other equipment for a proposed one-story automobile service, repair and garage building, to cost about $65,000.

The International Milling Co., 4 Exchange Place, Minneapolis, Minn., is arranging an early call for bids for a proposed flour mill and elevator on Catherine Street, Buffalo, nine-stories, 100 x 150 ft., to cost close to $1,000,000 with power, transmission, conveying and other machinery. F. A. Bean is vice-president.

The Worthington Pump & Machinery Corporation, 63 Roberts Street, Buffalo, has secured a permit for a one-story steam power house at its plant to cost about $23,000.

In connection with general expansion in its light and power properties in different sections of New York State, the Associated Gas & Electric Co., 61 Broadway, New York, has arranged budgets as follows, covering work in progress and new construction to be carried out in the near future: Central New York, $1,643,300, including gas generating station at Ithaca; western New York, $849,800; northern New York, $487,600; eastern New York, $365,700; Harlem River district, $481,800; and Patchogue Electric Light Co., $52,900; in the Cape Cod and Martha's Vineyard section of Mass., $629,000; Kentucky-Tennessee district, $765,900; and at Manila, P. I., $656,600.

The Ritter Dental Mfg. Co., 404 West Avenue, Rochester, N. Y., will soon call for bids for its proposed one-story foundry, 60 x 140 ft., to cost about $40,000. Foote & Carpenter, Temple Building, are architects.

The White Four Wheel Brake Co., has equipped a foundry at 4 Lake View Avenue, Buffalo, where it is manufacturing automobile brakes. Harry Z. White is secretary.

St. Louis

ST. LOUIS, Oct. 11.

PLANS are being arranged by the Empire District Electric Co., Joplin, Mo., for an addition to its power house at Riverton, Kan., to cost in excess of $1,250,000. Paul Sargent is company engineer. The company is operated by the Cities Service Co., 60 Wall Street, New York.

The City Council, Seymour, Mo., has approved a bond issue of $35,000 for extensions and improvements in the municipal waterworks, including the installation of deep well pumping machinery, elevated steel tank and tower and auxiliary equipment. A. H. Kendrick, Seymour, is engineer.

The Joplin Marble Quarries Co., Joplin, Mo., is said to be planning the construction of a new finishing and polishing plant, to cost $50,000, with machinery. T. C. Pennington is superintendent.

The Skelly Oil Co., El Dorado, Kan., has begun work on an expansion program at its local refinery, to include the installation of machinery for gasoline production and other equipment, to cost in excess of $200,000.

The Stinson Adding Machine Improvement Co., 321 South Grand Avenue, St. Louis, will take bids at once for a proposed two-story and basement plant 60 x 250 ft., to cost $90,000 with equipment. H. S. Stinson is president.

The Union Electric Light & Power Co., 315 North Twelfth Street, St. Louis, has plans for a new one-story shop to cost $21,000.

The Board of Education, Olathe, Kan, contemplates the installation of manual training equipment in its proposed three-story and basement high school to cost $175,000, for which bids will be asked on general contract this month. Owen, Saylor & Payson, Interstate Building, Kansas City, Mo., are architects.

W. R. Bovard, Orear-Leslie Building, St. Louis, architect, has plans for a three-story automobile service, repair and garage building, 100 x 105 ft., to cost $150,000 with equipment.

The Arkansas Power & Light Co., Little Rock, Ark, has been organized with a capital of 1,300,000 shares of stock, no par value, and $1,650,000 preferred stock, to take over and consolidate a number of electric light and power utilities operating in this district. Application will soon be made for permission to issue securities for the merger and proposed expansion. H. C. Couch, now president of the Arkansas Light & Power Co., will head the new company which will operate under the direction of the Electric Bond & Share Co., 71 Broadway, New York.

The Ralston Purina Co., 827 South Eighth Street, St. Louis, is completing plans for a new six and nine-story grain elevator, with adjoining storage and distributing plant, to cost approximately $250,000 with machinery. Donald Danforth is secretary and treasurer.

South Atlantic States

BALTIMORE, Oct. 11.

PLANS are under way for proposed additions to the plant of the Bethlehem Shipbuilding Corporation, South and Water Streets, Baltimore, on the Key Highway, estimated to cost $1,000,000 with machinery. J. M. Willis is general manager.

The Appalachian Power Co., Bluefield, W. Va., has applied for permission to proceed with a hydroelectric power development on the New River, vicinity of Radford, Va., with initial output of 80,000 to 100,000 hp.

Swift & Co., Union Stock Yards, Chicago, and Grant Building, Atlanta, Ga., are said to be arranging for the installation of a cold storage and refrigerating plant in a proposed two-story packing house at Atlanta, 80 x 160 ft. The entire project will cost about $160,000.

The American Radiator Co., 40 West Fortieth Street, New York, has leased a two-story building, 70 x 200 ft., to be erected on Hermitage Road, Richmond, Va., for a new factory branch and distributing plant, to cost about $40,000. A. J. Street, Mutual Building, Richmond, is architect.

The Atlanta Brake Service Co., Atlanta, Ga., organized by A. P. Shriver, has taken over a building at 293 Marietta Street for the establishment of an automobile brake service and repair works. It will operate as local representative for the Lockheed hydraulic brakes.

The Hackley-Morrison Co., 1708 Lewis Street, Richmond, Va., machinery dealer, has inquiries out for a drill sharpening machine, with capacity for ⅜ to 1½ in. drills; a jet condenser, capacity 5000 lb. of steam per hr.; and a 300-kw., 3-phase, 60-cycle, 2300-volt generator set direct-connected to uniflow engine unit, with starter, etc.

The Tide Water Power Co., Wilmington, N. C., is disposing of a preferred stock issue to total $1,500,000, a portion of the proceeds to be used for a new steam-operated electric power plant at Inglis, Fla., with capacity of 25,000 kw.; installation of new hydroturbine and auxiliary equipment in the hydroelectric generating plant at Dunnellon, Fla., and construction of about 70 miles of steel tower transmission lines in the vicinity of Inglis, Dunnellon and St. Petersburg, Fla. F. A. Matthes is vice-president.

The Atlantic Refining Co., 260 South Broad Street, Philadelphia, is said to have preliminary plans for extensions and improvements in its oil refinery at Brunswick, Ga., to cost $250,000 with equipment.

The Maryland Meter Works, 309 East Saratoga Street, Baltimore, is revising plans for a new six-story factory, 80 x 200 ft., for which previous bids have been rejected, to cost $250,000 with equipment. Theodore Wells Pietsch, American Building, is architect. E. S. Dickey is general manager.

The City Council, Greensboro, N. C., plans the installation of pumping equipment in connection with proposed extensions and improvements in the municipal waterworks. A fund of $100,000 is being arranged. P. C. Painter, Greensboro, is city manager.

The Savannah River Electric Co., Greenwood, S. C., recently organized by J. B. Park and M. G. McDonald, Greenwood, contemplates the construction of a hydroelectric generating plant in the vicinity of Clark's Hill, to cost in excess of $100,000.

The Southern Stove Works, Inc., P. O. Box 388, Richmond, Va., is said to be planning the installation of additional equipment, including special apparatus for malleable ironworking.

The Wayne Furniture Mfg. Co., Goldsboro, N. C., has preliminary plans for an addition to cost close to $50,000, of which about $20,000 will be expended for wood-working machinery. Nicholas Pullman is president and general manager.

The Maryland Steel Products Co., Baltimore, on Oct. 1 removed to new and larger offices in the Standard Oil Building.

Philadelphia

PHILADELPHIA, Oct. 11.

THE Pennsylvania Railroad Co., Philadelphia, has plans under way for extensions in its locomotive repair shops at Shire Oaks, near Elrama, Pa., consisting of a new engine house, addition to machine shop, oil house, storehouse and other structures, reported to cost in excess of $350,000 with equipment.

Charles A. Scheuringer, 1211 Chestnut Street, Philadelphia, architect, is completing plans for a new two-story automobile service, repair and garage building, 85 x 105 ft., to cost about $80,000 with equipment.

The National Carbon Co., Pier 6, Richmond and Cambria Streets, Philadelphia, has awarded a general contract to the Central Construction Co., Drexel Building, for a one-story milling plant to cost $30,000 with equipment. Headquarters are at 30 East Forty-second Street, New York.

The Imperial Type Metal Co., 1220 Howard Street, Philadelphia, manufacturer of printers' equipment and supplies, has acquired property bounded by Tioga, Ontario and Memphis Streets and Aramingo Avenue for $50,000 and will have plans drawn for a new plant.

V. B. Smith, Guarantee Trust Building, Atlantic City, N. J., architect, has plans for a three-story automobile service, repair and garage building, 40 x 112 ft., to cost approximately $70,000 with equipment.

James F. Horton, Trenton, N. J., has acquired property at Pennington Road and Brookfield Street, 50 x 185 ft., improved with a one-story building and will remodel for a new plant for the manufacture of cast stone products.

The Board of Education, Kingston, Pa., plans the installation of manual training equipment in its proposed two-story and basement high school to cost $675,000, for which bids will soon be asked on general contract. Mack & Sahm, Coal Exchange Building, Wilkes-Barre, Pa., are architects.

Fire, Oct. 5, destroyed a portion of the plant of the Danville Iron & Steel Co., Danville, Pa., including machine shop and wood-working shop, with loss reported at $100,000 including equipment. It is planned to rebuild.

The Pennsylvania Power & Light Co., Allentown, Pa., has acquired property at the Shamokin Dam, Sunbury district, as a site for a new power development, to cost in excess of $10,000,000 with transmission system.

The Board of Education, Red Lion, Pa., contemplates the installation of manual training equipment in a two and three-story senior and junior high school to cost in excess of $250,000, for which bids are being asked on a general contract until Oct. 18. C. J. Lappley, Parkside Building, Harrisburg, Pa., is architect.

The Lehigh Coal & Navigation Co., Lansford, Pa., is arranging for the early resumption of operation at its local iron foundry, following a shut-down for a number of months. Work has been started in the core shop. A traveling crane and other equipment will be installed.

The Borough Council, Brooklawn, near Camden, N. J., will install a pumping plant in connection with a proposed municipal waterworks, for which a bond issue of $55,000 is being arranged.

Milwaukee

MILWAUKEE, Oct. 11.

FAVORABLE developments for activity in the machine tool industry during the remainder of the year are appearing. The call for equipment is reported as good, while the increase in inquiries is accepted as the forerunner of a broadening demand. Trade is better than a year ago, and most makers of tools are unable to procure all of the skilled labor they could use in keeping output abreast of specifications. An encouraging feature is that business is not confined to a few groups, but covers the entire industrial field. Automotive industries, however, are taking the largest share of equipment.

The Badger Meter Mfg. Co., 841 Thirtieth Street, Milwaukee, let the general contract to R. L. Reisinger & Co.,

466 Oakland Ave., local, for a two-story addition, 60 x 120 ft. With equipment now being purchased the extension will cost about $75,000. The architects are M. Tullgren & Sons, 9 Waverly Place, Milwaukee.

The McNally-Tollefson Foundry Co., Stoughton, Wis., recently incorporated with $50,000 capital stock, commenced operations Oct. 7 in the gray iron shop of the former Moline Plow Co. plant at Stoughton. The principals in the new company have been conducting a foundry business at Lake City, Minn., for many years. For the present production will be devoted largely to orders for automotive castings, including pistons and flywheels. John E. McNally is president and general manager, and E. M. Tollefson, secretary-treasurer and sales manager.

The Wisconsin State Board of Control, A. W. Bayley, Madison, Wis., secretary, will take bids until Oct. 29 for the construction of a 40 x 40-ft. steel and brick addition to the power plant of the State Tuberculosis Sanatorium at Wales, Wis. The work will cost about $35,000. Arthur Peabody, Madison, is state architect.

The Wausau, Wis., Water Department is asking bids for furnishing three centrifugal pumps and miscellaneous valves for the new municipal filtration plant, which will cost $80,000 complete. The work is in charge of W. G. Kirchhoffer, consulting engineer, Madison, Wis. Emil Flatter is superintendent of the water department.

The River Falls, Wis., Board of Education has accepted the low bid of the J. B. Nelson Construction Co., Mankato, Minn., for the general contract on the new $200,000 high and vocational school. The architects are Ellerbe & Co., St. Paul. Dr. C. A. Dawson is president of the board.

The Schill Motor Car Co., Wisconsin Rapids, Wis., has engaged A. F. Billmeyer, local architect, to design a new automotive headquarters building, 50 x 120 ft., part two stories and basement, to cost about $40,000. Work will begin about Nov. 1. William Schill is manager.

The Board of Industrial Education, West Allis, Wis., has accepted the low bid of the Pfeifer Construction Co., 586 Sixty-sixth Ave., local, for erecting the first unit of the proposed new Vocational School. The cost is estimated at $200,000 or more. Plans are by Robert A. Messmer & Brother, architects, 221 Grand Ave., Milwaukee.

The Harms Mfg. Co., 1520 Buffum St., Milwaukee, has plans by Fred Graf, architect, 115 Grand Ave., for a new manufacturing plant, 34 x 110 ft., two stories and part basement. Bids are being taken after Oct. 11.

Cincinnati

CINCINNATI, Oct. 11.

ORDERS and inquiries from the automotive industry continue the most important feature of the machine tool market. Bookings the past week have been moderate in volume, but have not equaled those in the previous seven days. Business from railroads is light with little indication of an improvement in the near future. The volume of inquiries from other sources, however, is large, and sales in October are expected to parallel those in September.

The Delco Light Co., Dayton, has added to its previous purchases a jig borer, a 6-in. x 20-in. thread miller and two centering machines and probably will buy other equipment in the next 10 days. An automobile maker in the Detroit district has taken four 17-in. lathes, while another manufacturer has contracted for four large lathes. The International Harvester Co. bought three lathes. An automotive company is about to close for a number of special machines. The Illinois Central has purchased a 10-ft. pneumatic flanging clamp.

The Solid Storage Battery Corporation, Dayton, Ohio, has been incorporated and is planning expansion of its business. The company has been in operation the past five years.

The Corcoran Engineering Co., Springfield, Ohio, has awarded a general contract to Thomas Wenner, Springfield, for a one-story addition, 42 x 85 ft. The company also purposes to construct another addition later, two-stories, 50 x 100 ft.

The City Council, Bowling Green, Ky., is said to be planning extensions and improvements in the municipal waterworks, including the installation of electrically operated pumping machinery.

The Wood Portable Fire Escape Co., 432 Deaderick Avenue, Jackson, Tenn., contemplates the installation of nickel-plating equipment at its plant. Joseph C. Wood is head.

The Board of Education, Belpre, Ohio, is considering the installation of manual training equipment in a proposed new high school estimated to cost $130,000. F. J. Porter, 1714 North High Street, Columbus, Ohio, is architect.

The Southern Cities Power Co., Chattanooga, Tenn., has preliminary plans for a new hydroelectric power house on the Lick River, near Lewisburg, Tenn., to cost in excess of $150,000 with transmission line.

The Kentucky Utilities Co., Louisville, has disposed of a bond issue of $6,250,000, a portion of the proceeds to be used for extensions and improvements. The company operates the Kentucky Hydro-Electric Co., and the Old Dominion Power Co.

The State Department of Welfare, Ninth and Oak Streets, Columbus, Ohio, has plans for a new two-story and basement industrial and mechanical building, 125 x 125 ft., at the prison farm at Orient, Ohio, to cost about $160,000 with equipment. H. B. Briggs, Ohio-Hartman Building, is architect.

The Belt-Franklin Co., 224 East Gay Street, Columbus, Ohio, is considering the erection of a three-story and basement service, repair and garage building, 60 x 190 ft., to cost $120,000 with equipment. It is local representative for the Franklin automobile. E. Elford, head.

The D. L. Auld Co., 1209 North Fifth Street, Columbus, Ohio, manufacturer of metal name plates, etc., has awarded a general contract to T. J. Schirtzinger, 1535 North High Street, for extensions and improvements to cost about $25,000.

Pittsburgh

PITTSBURGH, Oct. 11.

DAY to day orders of machine tools are fairly numerous but as a rule run to individual machines. One firm reports the sale of a double-end grinder, a combination punch and shear, a bending roll and one or two other machines of special design to different customers. The Pittsburgh Board of Education has issued two lists. One for the Taylor Allderdice High School includes eight lathes, two drill presses, one power saw, one arbor press, one milling machine, one shaper, three grinders and 12 wood-working machines. The other list is for the Arsenal Vocational School and calls for 13 lathes, one arbor press, one shaper, two drill presses, two grinders, one milling machine and one power saw.

The Heppenstall Forge & Knife Co., 4620 Hatfield Street, Pittsburgh, has acquired property on Harrison Street, 20 x 100 ft., for extensions.

The Shannopin Coal & Coke Co., 311 Ross Street, Pittsburgh, has plans for a new mining development at Poland, near Dunkard, Pa., to include the construction of several mechanical buildings including forge and blacksmith shop, fan house, electric substation and machine shop. The entire project will cost about $115,000. G. B. Baton Co., First National Bank Building, Pittsburgh, is engineer.

Courtney L. Whittaker, Dravosburg, Pa., architect, has completed plans for a two-story automobile service, repair and garage building, 60 x 145 ft., at McKeesport, Pa., to cost about $85,000.

The Penn Public Service Co., Pittsburgh, operated by the Associated Gas & Electric Co., 61 Broadway, New York, has work under way on an expansion program to cost $4,600,000, of which about $2,875,000 has been expended, the remainder of the fund to be used before the end of the year. The work will include five large power substations, transmission lines, power station improvements and other work.

The Pittsburgh Engineering Co., Jeannette, Pa., has plans for a new one-story foundry, 110 x 110 ft., to cost $45,000. E. W. Eckert, 420 Y Street, Derry, Pa., is architect.

The American Gas & Electric Co., 30 Church Street, New York, has concluded negotiations for the purchase of the Meyersdale Electric Light, Heat & Power Co., Meyersdale, Pa.; Garrett Electric Light, Heat & Power Co., Garrett, Pa., and the Citizens' Light & Power Co., Salisbury, Md., heretofore operated by the Wilmoth interests, Meyersdale. The new owner will consolidate the properties and plans extensions.

The Blacklick Township School District, Expedit, Pa., has plans for a new three-story and basement vocational high school, 80 x 120 ft., to cost $135,000 with equipment. Bids are being asked on a general contract. J. E. Adams, Nemo Building, Johnstown, Pa., is architect.

The Columbia Gas & Electric Corporation, Charleston, W. Va., has been formed to take over and consolidate the Columbia Gas & Electric Co., Charleston, and the Ohio Fuel

The Crane Market

INQUIRY for both overhead and locomotive cranes is light and but little of the pending business has been awarded in the past week. The overhead track and trolleys for the Bayway Terminal, Elizabeth, N. J., will probably not be purchased for about 30 days. There are a numer of small inquiries for hand power cranes and other small overhead equipment that are expected to be settled shortly. In the locomotive crane field there is a crane pending for the city of Newark, N. J., and the two cranes for the St. Regis Paper Co., Watertown, N. Y.

Among recent purchases are:

Honolulu Iron Works, 165 Broadway, New York, a 5-ton, 28-ft. span hand power crane from Alfred Box & Co.

Tidewater Oil Co., 11 Broadway, New York, a 6-ton, 32-ft. span hand power crane with 91-ft. lift, for Drumright, Okla., from Alfred Box & Co.

Horne Copper Co., Montreal, two 15-ton and four 10-ton overhead cranes from an unnamed builder.

Wausau Sulphate Fibre Co., Mosinee, Wis., two 30-ton locomotive cranes from the American Hoist & Derrick Co.

American Forest Products Co., New York, a 10-ton crawl-tread locomotive crane from the Industrial Works.

Co., operating electric light and power utilities, and other properties in Ohio. The new corporation will have combined assets of about $50,000,000 and plans extensions, including transmission lines.

The Keystone Emergency Lighting Co., 900 Fifth Avenue, McKeesport, Pa., a recently incorporated company, is engaged in assembling and installing emergency lighting systems. The company manufactures a commercial unit for illumination, but aside from this merely acts as a distributer. J. A. Graver is manager.

Chicago

CHICAGO, Oct. 11.

BOOKINGS by machine tool dealers the past week have been well above the average of the past three or four weeks. The bulk of this business, however, has come from the Racine, Wis., plant of the Nash Motors Co., where a large extension program is under way. The market otherwise is comparatively quiet and new inquiry is light and widely scattered. Hopes are being revived that some tools on the Fort Wayne, Ind., list of the General Electric Co. will be placed here. The International Harvester Co. has issued a sizable list for its truck plant at Fort Wayne. Few orders are coming from the railroads. The used machine tool market is inactive and dealers are of the opinion that the recent machine tool exhibit has had much to do with this, for the reason that users visiting the show were impressed by the improvements made in new machines and which cannot be had on tools that are on the used market.

The Sanitary District of Chicago, 910 South Michigan Avenue, Chicago, Lawrence King, president, will soon begin the construction of a one-story service and tankage building at Niles Center, Mich., 130 x 140 ft., to cost in excess of $650,000 with equipment. H. P. Beller, 910 South Michigan Avenue, is engineer.

The Edison Electric Appliance Co., Chicago, manufacturer of electric heating and cooking devices, has acquired the former plant of the Vitanola Talking Machine Co., at Cicero, Ill., comprising three main buildings, with total floor area of 190,000 sq. ft., and contemplates the early establishment of its plant at this location.

The Hammond Lumber Co., 360 North Michigan Avenue, Chicago, has awarded a general contract to William G. McNulty, 58 East Washington Street, for a one-story plant at Riverdale, Ill., to cost $200,000. The George C. Nimmons Co., 122 South Michigan Avenue, is architect.

The People's Light & Power Corporation, Minneapolis, Minn., is disposing of a preferred stock issue to total $800,000, a portion of the proceeds to be used for extensions and the acquisition of additional properties. The company is operated under the management of the W. B. Foshay Co.

The American Container Co., operated by the National Lead Battery Co., 1704 Robiyn Avenue, St. Paul, Minn., is considering plans for a new factory for the manufacture of battery specialties, to cost $100,000 with equipment.

The City Council, Watertown, S. D., has plans under way for a new municipal electric light and power house, with initial installation of a 1500-kw. generating unit and accessory equipment, to cost about $50,000. Arthur L. Mullergren, Board of Trade Building, Kansas City, Mo., is engineer.

The City Ice Co., Clinton, Iowa, is said to be contemplating the erection of a new ice-manufacturing plant at Cedar Rapids, Iowa, to cost close to $100,000 with equipment. A. G. Crawford is president.

The Corn Conveyor Belt Co., 53 West Jackson Boulevard, Chicago, manufacturer of fire hose, conveyer belting, etc., has leased the plant at Griffith, Ind., 75 x 100 ft., for the establishment of a new works. It is also planned to begin work soon on a one-story addition, 50 x 100 ft.

The Standard Gas & Electric Co., Minneapolis, Minn., is disposing of a bond issue of $7,500,000, a portion of the proceeds to be used for extensions and improvements. The company is operated by H. M. Byllesby & Co., Chicago; John J. O'Brien is president.

The Eagle Tank Co., 2450 North Crawford Street, Chicago, manufacturer of wooden tanks, etc., is considering the erection of a new one-story plant to cost $160,000 with equipment. W. O. Olsen is president.

The Walworth Co., 2436 West Fifteenth Street, Chicago, will build a one-story brick pipe cutting shop, 50 x 60 ft., to cost $15,000. A Epstein, 2001 West Pershing Road, is the architect.

C. Buckley, will build a one story brick machine shop, 47 x 125 ft. at 1755 Armitage Avenue, Chicago. The architect is B. H. Pistorius, 1215 North Maplewood Avenue.

Andel & Co., 5012 Pensacola Avenue, Chicago, will build a one story storage and sheet metal shop, 50 x 119 ft., to cost $18,000. Architect H. Zook, 20 West Jackson Boulevard, is the architect.

The New England Butt Co., Providence, R. I., builder of braiding machinery and wire rope machinery, has opened a Chicago office at 140 South Dearborn Street, in charge of W. A. Richards.

The Independent School District No. 39, Eveleth, Minn., advises that it does not contemplate installing manual equipment in the proposed addition to the senior high school. A separate building for manual training work has been maintained for some time.

Detroit

DETROIT, Oct. 11.

WORK is in progress on extensions and improvements in the plant of the Field Body Co., Owosso, Mich., manufacturer of automobile bodies, including the installation of additional equipment for the manufacture of bus bodies. The plant is now owned and operated by the Grand Rapids Body Co.

The Shield Enameling Co., 2549 North La Salle Gardens, Detroit, has asked bids on general contract for a new one-story plant, 100 x 150 ft., to cost about $50,000 with equipment. T. C. Hughes, 2615 Joy Road, is architect.

The Board of Works, Muskegon, Mich., is said to be planning the installation of pumping equipment in connection with proposed extensions and improvements in the municipal waterworks to cost $80,000.

The Consumers Power Co., Jackson, Mich., will proceed with a new coal-gas generating plant at Flint, Mich., with by-products works for the production of ammonium sulphate, etc. Contracts will be placed soon for coal and coke handling machinery, including conveyors, crushers, screens and accessories. The entire project will cost close to $1,000,000.

The March Irrigation Co., Muskegon, Mich., has plans nearing completion for a new one and two-story plant for the manufacture of irrigation machinery and parts, to cost close to $50,000 with equipment. Vanderwest & Child, Montgomery Building, are architects and engineers.

The Detroit City Gas Co., Clifford and Bagley Avenues, Detroit, has plans for a one-story service building, 57 x 150 ft., with repair and garage department at the Coolidge Station, to cost about $70,000. A similar works, 50 x 115 ft., to cost more than $60,000, will be built at the Lynch Road Station. Weston & Ellington, Stroh Building, are architects for both structures.

The Board of Education, L'Anse, Mich., contemplates the installation of manual training equipment in its proposed two-story and basement high school to cost $275,000. F. E. and G. F. Parmelee, Iron Mountain, Mich., are architects.

The Burroughs Adding Machine Co., 6071 Second Boulevard, Detroit, has plans for an addition to its power house, to cost in excess of $50,000 with equipment. Albert Kahn, Inc., Marquette Building, is architect.

The proposed new gray iron foundry of the Buick Motor Co., Flint, Mich., will be located at the main plant at Flint and not at Detroit, as previously announced. The structure will be one-story and give employment to more than 1500 men. It will cost more than $3,500,000 and is scheduled for completion next June. Harry H. Bassett is president and general manager.

The Gemmer Mfg. Co., 2435 Merrick Avenue, Detroit, manufacturer of automobile gears, etc., has awarded a general contract to the W. E. Wood Co., Ford Building, for a proposed two-story factory and office building, 81 x 180 ft., and 40 x 220 ft., respectively, to cost $300,000 with equipment. Frederick J. Winter, Book Tower, is architect.

The Board of Education, Sault Ste. Marie, Mich., will soon begin superstructure for a new manual training building at the high school, to cost close to $100,000 with equipment.

The New Haven Foundry Co., New Haven, Mich., recently incorporated with capital stock of $30,000, has a plant fully equipped and is manufacturing castings for the Chrysler Motor Car Corporation.

General Foundries, Inc., Flint, Mich., recently incorporated with a capital stock of $150,000, will manufacture iron castings. It is affiliated with the Flint Foundry Co. The new company is building the first unit of its plant which will have a capacity of 40 tons per day. This plant will be in operation early in November. The second unit, which will bring the capacity up to about 100 tons a day, will be built in the spring. The output of the foundry will consist mostly of automobile castings for Michigan manufacturers.

Gulf States

BIRMINGHAM, Oct. 11.

THE Empire Refineries, Inc., Gainesville, Tex., recently formed with a capital of $10,000,000, has acquired the local plant of the Producers' Refinery. Plans are being prepared for enlargements and the installation of additional machinery. The new company will be controlled by Henry L. Doherty & Co., 60 Wall Street, New York.

Oscar Robinson, P. O. Box 73, Austin, Tex., is planning the early purchase of cottonseed oil machinery for installation in a plant at Taylor, Tex.

The Central Power & Light Co., Frost Building, San Antonio, Tex., has acquired an ice-manufacturing plant at Comfort, Tex., and plans enlargements estimated to cost $40,000 with equipment. The company is also arranging for an addition to a similar plant at Fredericksburg, Tex., lately acquired.

The Humble Oil & Refining Co., Houston, Tex., plans the early construction of a new pipe line to the Charco Redondo section, southern part of Zapata County, where a storage and distributing plant will be located.

The Lock Joint Pipe Co., Willson Building, Dallas, Tex., has acquired property on Capps Street and plans the establishment of new works for the manufacture of concrete pipe of large diameter.

The Standard Oil Co., Lazarro and Hillsboro Streets, Tampa, Fla., has plans for a new storage and distributing plant in the East Tampa section, including pumping station, to cost $45,000 with equipment.

The City Council, El Dorado, Tex., plans the installation of a pumping plant in connection with a proposed municipal waterworks, for which plans are being prepared. The entire project will cost about $40,000.

The Unit Mfg. Co., Russell Building, San Antonio, Tex., manufacturer of heating equipment to utilize natural gas, has arranged for the removal of its plant to Houston, Tex., where temporary quarters have been secured at 4815 Harrisburg Boulevard. It is purposed to increase the output at the new location. H. E. Dickinson is president.

The Gulf States Utilities Co., Beaumont, Tex., is disposing of a bond issue of $9,000,000, a portion of the fund to be used for extensions and improvements. It is purposed to use about $1,000,000 for expansion during the remainder of 1926, and $1,200,000 as a portion of the appropriation to be arranged for 1927 additions and betterments. C. F. W. Wetterer is president.

The Lake Charles Building Material Co., 1900 South Ryan Street, Lake Charles, La., is planning the installation of conveying, loading and other handling equipment at its sand and gravel properties.

The George E. Breese Lumber Co., Monroe, La., is completing plans for the construction of a new plant for the production of hardwood flooring and other finished stock, to cost $200,000 with equipment.

The General Utilities & Operating Co., Hastings, Fla., operating the Hastings Power & Ice Co., is planning for extensions and improvements in the power and ice-manufacturing plants, including a 250-hp. Diesel engine and 15-ton daily capacity ice machine. The entire project will cost about $55,000.

The Southern Ice & Utilities Co., Dallas, Tex., plans the installation of additional equipment in its power plant at Midland, Tex., including a 200-hp. engine unit.

Indiana

INDIANAPOLIS, Oct. 11.

E. L. CORD, president Auburn Automobile Co., Auburn, Ind., and associates, have closed negotiations for the purchase of the plant and business of the Duesenberg Motors Co., Indianapolis, for $500,000. A new company is being organized to take over the property, with capital in excess of $1,000,000. Plans are being completed for extensions to provide for an increase from 5 to 15 custom-built automobiles per week. Mr. Cord will head the new company. Fred S. Duesenberg, heretofore president of the Duesenberg company, will continue as vice-president in charge of engineering and experimental work; August Duesenberg will also remain with the new company in an engineering capacity.

The Bowes Seal Fast Corporation, 650 North Meridian Street, Indianapolis, manufacturer of automobile specialties, has awarded a general contract to the Ostrom Realty & Building Co., People's Bank Building, for its proposed two-story and basement plant, 50 x 90 ft., to cost approximately $30,000. Robert M. Bowes is president.

The Indiana Consumers Gas & By-Products Co., Terre Haute, Ind., recently formed under Delaware laws, has closed arrangements for the acquisition of the local plant and business of the Indiana Coke & Gas Co., including by-products department. A bond issue of $2,400,000 has been arranged to carry out the purchase, and for proposed extensions. Alfred M. Ogle is chairman of the board.

The Ross Gear & Tool Co., Lafayette, Ind., has asked bids on general contract for a one-story addition, 55 x 100 ft., to cost about $30,000 with equipment. Walter Scholer, Lafayette Life Building, is architect.

The Hide, Leather & Belting Co., Indianapolis, manufacturer of mechanical belting, etc., has taken out a permit for a four-story addition, 23 x 195 ft., to cost about $75,000 with equipment. Fermor S. Cannon, 21 Virginia Avenue, is architect.

The Board of Works, Evansville, Ind., has plans under way for extensions and improvements in the municipal water plant and system, including two pumping units, coal-handling equipment, etc. The entire project will cost in excess of $800,000. Hiller & Anderson, Cincinnati Water Works Department, Cincinnati, are engineers.

The Ames Shovel & Tool Co., Anderson, Ind., has asked bids on a general contract for a one-story addition, 80 x 200 ft., to cost $45,000. E. F. Miller, Anderson, is architect. Headquarters are in the Ames Building, Boston.

Cleveland

CLEVELAND, Oct. 11.

MACHINE tool business with dealers has slowed down this month and not much new inquiry is coming out. It is not expected, however, that the lull will be more than temporary. Very little business is coming from the automotive industry in Detroit or from automobile parts makers in this territory. Railroad orders are also scarce. A local manufacturer of turret lathes reports that its business so far this month is holding up to the September volume, which was very good. The Cleveland Planer Co. has booked a 48-in. planer from the Lupkin Foundry & Machine Co., Lupkin, Tex. The Firestone Tire & Rubber Co., Akron, Ohio, is inquiring for an open-side planer.

The Forest City Foundry & Mfg. Co., Cleveland, has placed a contract for the erection of a 60 x 152-ft. addition to its plant at 9300 Maywood Avenue.

The Sterling Mfg. Co., 2845 Prospect Avenue, Cleveland, has leased a two-story plant with 18,000 sq. ft. of floor space

at 4827 Lexington Avenue, for the manufacture of radio equipment and electrical testing devices.

The Darlington Fireproofing Co., East Palestine, Ohio, recently incorporated for the manufacture of fireproofing material, contemplates the erection of a plant. F. A. Hoiles, president Alliance Brick Co., is president, and J. E. White of the White Clay Mine Co., Pittsburgh, is vice-president and general manager.

The East Ohio Gas Co., Cleveland, has placed a contract with the Hinkin-Conkey Construction Co. for a one-story shop building, 56 x 100 ft.

The village of Green Springs, Ohio, contemplates the erection of a $50,000 waterworks plant. George Champe, Nasby Building, Toledo, is the engineer.

The city of Alliance, Ohio, is preparing plans for a sewage disposal plant at an estimated cost of $800,000. George B. Gascoigne, Leader Building, Cleveland, is the engineer.

Bids for a filtration plant and waterworks will be taken by the County commissioners of Lorain County, Elyria, Ohio, Oct. 15. The estimated cost is $277,000.

Canada

TORONTO, Oct. 11.

WHILE machine tool business continues good and sales for the month of September were considerably better than those for August, local dealers and builders state that demand as a whole has failed to come up to expectations. The general market, however, is decidedly better than a year ago and the outlook for the future is bright. The automotive industry is placing orders for tools, but chiefly on replacement account, while there is a steady demand for single tools for garages and repair shops. Additions are being made to a number of foundries and machine shops throughout the Dominion from which small lists appear from time to time. Wood-working tools have been showing improvement and some good orders have been closed for this class of equipment.

According to an announcement by Premier Taschereau of Quebec, the hydropower development at Carillon Falls, on the Ottawa River, will be started soon. About 375,000 hp. will be developed. The undertaking will be carried out by the National Hydro Electric Co., which is headed by Hon. Henry Miles.

The City Council, Sherbrooke, Que., will develop the Westbury power site at a cost of approximately $500,000. The undertaking will include the construction of a dam and the erection of a power plant.

The Friday Mines, Ltd., Timagami, Ont., proposes to install a steam plant during the winter and expects to carry on extensive development work there.

The Premier-Paymaster Mines, Timmins, Ont., proposes to start work immediately on an addition to its mining plant. The undertaking calls for the erection of a 1000-ton concentrator and other works.

The Fraser Companies, Ltd., Millbank, N. B., proposes to add a number of new lath machines to its present equipment.

The Canadian Sugar Refining Co., 511 St. Catharines Street, Montreal, will build an addition to its boiler house at a cost of $100,000. The general contract has been let to J. MacGregor, Ltd., 121 Bishop Street.

The Enterprise Foundry Co., Sackville, N. B., has awarded a general contract to A. Wheeler, Ralph Street, Moncton, N. B., for an addition to cost $15,000. Some equipment will be purchased.

Morrow & Beatty, Ltd., 442½ George Street, Peterborough, Ont., has been awarded the general contract for pulp and paper mills and power development at Smoky Falls, Ont., to cost $12,000,000 for the Spruce Falls Power & Paper Co., Ltd., 300 Bay Street, Toronto.

The Hawkesbury Lumber Co., Hawkesbury, Ont., has started work on the erection of a planing mill and will purchase complete machinery.

Western Canada

The Empire Box Co., New Westminster, B. C., will build a new mill to replace the one recently destroyed by fire with a loss of $40,000. New equipment will be purchased. W. N. Martin and P. J. McMurphy are interested.

A syndicate in which Frank P. Jones and H. G. Gundy, both of Toronto, and Angus McLean of Bathurst, N. B., are interested, proposes to build a pulp and paper mill at the junction of the Fraser and Nechako Rivers at Prince George, B. C., at a cost of approximately $30,000,000.

Pacific Coast

SAN FRANCISCO, Oct. 6.

CONTRACT has been let by the Los Angeles Railway Co., Pacific Electric Building, Los Angeles, to the Willard-Brent Co., 254 East Twenty-seventh Street, for its two-story automobile service and repair building for motor buses to cost $125,000 with equipment.

Emil Brown & Co., 300 East Ninth Street, Los Angeles, operating a sheet metal works, have acquired property at Central Avenue and Sixty-third Street for a new one-story plant, to cost about $25,000 with equipment.

The Concrete Pressure Pipe & Construction Co., Gilroy, Cal., is considering plans for new works for the manufacture of concrete pipe, to cost close to $45,000 with equipment. G. W. Eastman and H. C. Sholten are heads.

The City Council, Stockton, Cal., has plans under way for extensions in the North sewage disposal plant, to include the installation of electric-operated pumping machinery and accessory equipment. W. B. Hogan is city engineer.

The Board of Education, Annandale, Cal., plans the installation of manual training equipment in its new Luther Burbank junior high school group, to cost $300,000. Noerenberg & Johnson, Los Angeles, are architects.

J. W. Hunt, Cory Building, Fresno, Cal., is at the head of a project to construct a local automobile service, repair and garage building, to cost $170,000 with equipment.

The Longview Fiber Co., Longview, Wash., recently organized, is asking bids on general contract for the initial units of its proposed mill, to cost in excess of $1,000,000 with machinery.

The Osgood Panel & Veneer Co., Tacoma, Wash., recently formed with a capital of $200,000 by George H. Osgood, heretofore connected with the Wheeler-Osgood Co., Tacoma, and associates, has plans for the erection of a new plant on the Hylebos waterway, to cost about $40,000 with equipment. Mr. Osgood will be president of the company; George J. Osgood, vice-president, and Frank Townsend, treasurer.

The Western Drop Forge Co., South Boyle Avenue, Los Angeles, is said to be contemplating the erection of a new plant, to cost in excess of $60,000 on property recently acquired.

The Weyerhaeuser Timber Co., Tacoma, Wash., is said to have plans under way for a new sawmill at Longview, Wash., to cost in excess of $450,000 with machinery. It has work in progress on a new mill at Lewiston, Idaho, to be operated in the name of the Clearwater Timber Co., a subsidiary. George S. Long is general manager.

The City Council, Hazleton, Idaho, has plans under way for a new municipal electric light and power plant.

Foreign

THE Secretary, Tenders Committee, Public Works Department, Wellington, New Zealand, is asking bids until Nov. 30 for two 3-phase, 1500-kva. transformers; until Jan. 4 for seven 1000 kva. single phase transformer units.

The National Government of Colombia, Bogota, has authorized the construction of an aerial cableway from Mani-

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zales to a port on the Pacific Ocean in the Intendencia of Choco. The Department of Caldas will be in charge of the work. The American Consulate, Barranquilla, Alfred T. Burri, consul, has information regarding the project.

The Superphosphate Works Co., Stockholm, Sweden, has applied to the Government for a state loan of close to $850,000, the proceeds to be used for the construction of a new nitrate and nitric acid plant at Trollhattan, adjoining the present carbide works of the company. The new plant will be equipped for a capacity of about 500 tons of concentrated acid and 3000 tons of ammonium nitrate per month.

The municipal council at Cisneros, Antioqua, Colombia, has applied to the State government for permission to contract a loan of $20,000 for the installation of a municipal electric light and power plant. The American Consulate, Bogota, William Boaz, commercial attaché, has information regarding the project.

The Unterelbe Power & Light Co., Altona, near Hamburg, Germany, operated as a city enterprise, is arranging for a bond issue of $2,500,000 in the United States, a portion of the proceeds to be used for extensions and improvements.

Desnoyers Frères, 116 Boulevard Richard-Lenoir, Paris, (XI), France, manufacturers of seamless tubes in copper, brass, silver, aluminum, steel, etc., are interested in an equipment of electric furnaces for producing copper and brass. They desire propositions covering furnaces of 50 to 110 kw. capacity to operate on 220-volt, 50-cycle current. They would like to have the propositions covering, beside the copper, brass mixtures of 60 per cent copper and 40 per cent zinc, and brass of 70 per cent copper and 30 per cent zinc. Proposals must indicate the consumption of current, the time of melting, the cost of operation, and finally all necessary information covering the process of casting in lead crucibles. The price of the furnaces should be given delivered at Le Havre, France. If possible, they desire to receive the propositions in the French language.

The Rhodesian Congo Border Concession, Ltd., Capetown, South Africa, is planning the early development of copper properties in the Katanga district. Mining machinery, power equipment, conveying and other apparatus will be installed. It is said that a mill will be constructed at a later date. The company is raising a fund close to $1,500,000 to carry out the project. The Anglo-American Corporation, an interest of J. P. Morgan & Co., 23 Wall Street, New York, bankers, will act as consulting engineer for the project.

Industrial Finances

The Igo Mfg. Co., Kenosha, Wis., manufacturer of steel bumpers and other automotive devices, has liabilities of $55,501 and assets of $18,400, according to schedules filed upon the involuntary petition in bankruptcy instituted recently by three plant employees with wage claims. The concern was established in Kenosha about three years ago by Thomas C. Igo, formerly of Chicago, but operations were suspended early in the summer.

The National Steel Car Corporation, Ltd., Hamilton, Ont., in its annual report for the year ended June 30, 1926, showed a net operating profit before depreciation of $151,102, as compared with $46,336 for the preceding period. The company retained its working capital position without much change, but current assets and current liabilities showed substantial increases over the preceding year, owing to the closing down of the plant on account of lack of orders. President Robert J. Magor, in presenting his report, stated that railroad car orders received and produced showed an improvement over the previous fiscal year, but still represented but a small percentage of the capacity of the plant.

Net profit of the Pittsburgh Steel Co. and subsidiaries for the fiscal year ended June 30, 1926, after taxes, depreciation, depletion and interest was $2,533,577, equivalent after preferred dividends to $7.10 per share on the 253,500 shares of common stock. This compares with a profit of $1,052,755 or $1.81 a share on the 175,000 shares of common stock for the previous year. The company had a surplus of $864,837 as compared with a deficit of $382,245 in 1925.

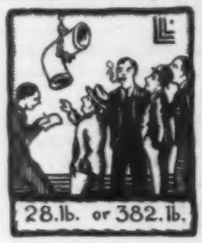
Net profit of the American Ship Building Co., Cleveland, and subsidiaries for the year ended June 30, 1926, after depreciation, taxes, etc., was $1,150,122. The company had a surplus on the same date of $5,837,167, as compared with $6,033,231 on the same date in 1925.

Share earnings of the Acme Steel Co., Chicago, for 1926 will exceed by a fair margin the $8.26 a share earned in 1925 as indicated in an official report concerning the current business of the company. Dividend rate on the new common stock was increased on July 1 of this year from $2 a year to $2.50, with a payment of a regular quarterly of 62½ cents. Interest charges on the company's $1,440,000 in 20-year first mortgage bonds were earned 15.91 times in 1925, as compared with 10.97 times in the previous year.

THE LAST WORD

(Contributed by the Reader Service Department of The Iron Age Publishing Co.)

Did you say close? In the weight guessing contest at the Foundry Convention at Detroit one contestant, after examining closely a 200½-lb. gray iron casting, hazarded a guess of 28 lb. Another made a particularly careful survey and put in a figure of 382 lb.



As the vocational adviser of these none too expert estimators, we strongly adjure them not to join the ranks of the gentlemen who tickle you under the arms, pinch your calf, and correctly announce, "You weigh 247 lb. Step on the scales. Right! Ten cents, please."

Another awful thing would be for some innocent foundry proprietor to hire them to prepare cost estimates on castings from blueprints.

Let the buyer beware. The dictum, *caveat emptor*, is slowly but surely losing its force, for the practice of coddling buyers is spreading. Guarantees are as plentiful as autumn leaves. You don't even have to ask for them. They are thrust upon you, whether it is a pipe, pump, pyrometer, or percolator you are buying.

Some long-headed individual must have discovered that it pays to keep you happy after you buy, not so much because you may come back for more, but because every satisfied customer is a salesman who works without pay.

A British motor car manufacturer goes a step farther and displays a paternal interest in his product even after it has left the hands of the original buyer. Listen to this extract from a letter received by the purchaser of a second-hand Singer car:

"We shall be glad if you will acknowledge receipt of the enclosed book by *singing* and returning the enclosed postal."

We admit the italics, but the transposition is not ours. Would you say that pæans of praise are expected?

In red ink to the tune of more than a half million dollars is the way a great cotton goods company winds up its fiscal year. This is no laughing matter, though there is a smile in the naïve statement a company official makes to the stockholders that in the cotton goods industry it seems the demand does not equal the supply.

After interviewing manufacturers of such diverse products as nursing bottles, shoe polish, stuffed olives, kiddie cars and cod liver oil, we are forced to the conclusion that this condition is pretty general.

Hindsight is a big sight safer than foresight. We see by the papers that Mr. Tunney's victory was forecast by the stars, but unfortunately the astrologers neglected to announce the fact until *after* Mr. Dempsey had lost his coronet.

Which calls to mind the growing addiction of some business prognosticators to the safe and sane habit of waiting for an event to eventuate before "forecasting" it. If they were content to remark that such and such a thing *is* happening, we would have no quarrel with them, but they "predict" after it has actually taken place.

Prophecy is strong medicine, and not to be taken without a doctor's prescription, but when we do take it we like it neat.

A. H. D.